565 Unions, or more exactly concubinage, between Imrad and
[595] Negresses are very common.

[567] Imrad have the right to possess black slaves who are employed in household work and in keeping the herds.

114 Schirmer has said that the Ahaggar Imrad were sedentary peoples
● 241 entrusted with keeping the gardens; (1) he has committed an error,
565

1. Le Sahara, p. 298.

certainly because of erroneous information. This is all the more curious since Duveyrier had already defined exactly the position of the Imrad. (2)

2. Les Touareg du Nord, p. 334.

114 Duveyrier translated the word amrid by the word "serf, " which
565 corresponds exactly to the Arab expression ra'aya, and also because
566 the ra'aya are subjects liable to forced labor and taxes, whom the marabouts are not allowed to possess by Moslem law. Duveyrier believed he was confirmed in his opinion because of the fact that the Inislimen of the Ajjer did not have the right to have Imrad. This is an error of interpretation. This Arabic term cannot be suitable under the circumstances, for the social class of the Tuareg Imrad has no equivalent among the Arabs.

We have preferred the term "vassals" which is more suitable
[651] in our minds, because the Imrad are not unconditionally subject to
[643] forced labor, they pay a perfectly defined vassalage fee, their
[657] chiefs participate in the election of the aménokal, and they themselves own slaves.

/167/ Moreover, the term "vassals" has been adopted by Richer, Deniker, Verneau, etc.

565 192 In the Sudan they are often referred to by the name of Daga, a word of Sonrhaï origin, as is the word Bourdame which designates the Imochar.

565 233 423 241 563 Owners of a great many goats, the Ahaggar Imrad are limited to short moves, but they are not sedentary. They actually have a great many centers of cultivation, but they do not cultivate themselves; for this purpose they use Negroes from the Tidikelt -- the Harratin /Haratin/ who act as tenant farmers and cultivators.

563 Assimilated vassals. -- Tribes bearing the names Issekkemâren and Irréguénaten /Irreganaten/ are generally assimilated with the Imrad. These tribes, although also vassals of the Imochar, are appreciably different from the Imrad from the social point of view.

The Issekkemâren and the Irréguénaten are not people of their race in the eyes of the Tuareg. Linked to them by some remote [602] bonds of kinship, they are considered mixtures, exactly as their name indicates. They are the product of mixed marriages, [582] generally of Tuareg women with Arabs or Berbers. The term Irréguénaten has even been extended to groups springing from Imochar women or Imrad men. They exist in several confederations; there are Irréguénaten among the Ihăggaren as well as among the river Tuareg, Issekkemâren among the Ihăggaren and in the Timbuktu region.

563 631 Socially they occupy a higher rank than the Imrad; they are free, and their vassalage to the Imochar is much more liberal. They have placed themselves under their protection because they were too weak to insure their own defense. For this reason, they pay an [643 651] annual indemnity called rharama to the aménokal. They administer their own affairs just as the Imrad do, and they have the same mores [184] as the Tuareg. On the surface they cannot be distinguished from them. They also speak Tamashek, although they are less rigorous [567 461] keepers of the old traditions, it is true. They own slaves, but they do not show as great a repugnance for work as the Imochar and the Imrad. There are never unions between them and the Imochar, [582] and they are quite rare with the Imrad.

631 a very ancient tribe, the Isbeten, who were the autochthons of the Ahaggar and whom the Dag Rali would have found in Atakor when they came to settle there.

After the battle at Tit where they lost more than 100 fighters, the Dag Rali still numbered 60 warriors. The 1938 census gives 1, 090 persons, 334 of them men, including the Iklan. This increase is quite rare among the Tuareg and reflects their wealth and the improvement of their living conditions since the French occupation.

[161] [177] [511]

They nomadize in the western part of the Koudia, which is their absolute fief where no other fraction is admitted.

/192/ On the east, the boundaries of the lands over which they range are fixed by the right bank of the Tamanrasset wadi and the Interkadène wadi as far as Ideles; on the south by the southern zone of the Tahalra as far as Tin Dahar; on the west by In Eker; and on the north by the line from In Eker to Hirhafok to Ideles.

631 651 The Dag Rali pay a tribute of ten bags of dates or sorghum to the aménokal; in addition, each family which sends a caravan to the Sudan pays him a small bag of sorghum. If the pastures are good, they add several "botta" of melted butter and the milk of twenty ewes: In the case of a successful raid, they pay the nobles half of the ewes.

631 233 556 439 The Dag Rali are now the richest people in the Ahaggar. They own more than 1, 200 goats and more than 1, 000 camels. Thanks to their beasts of burden, they can take many very remunerative caravans to the Sudan and to the Tidikelt. They hold in common escheated flocks which are called Edjeré-n-boutelma. When the pastures are insufficient to feed all their livestock, they entrust their camels to the Irréguénaten who graze them on the Saharo-Sudanese border.

631 241 423 Since they are very open-minded, they were in favor of cultivation in the centers of the Ahaggar, and at the present time they possess lands at Ilâman, Tarahanahet, Tamanrasset, Abâlessa, Iglen, Tafârit, I-n-Amegel, and Silet, which Negroes cultivate for them. The aménokal has granted them a certain number of palm trees in the Silet oasis which formerly belonged to the Taitok.

173 Ăgouh-en-Tĕhlé means "reed people." Legend has it that they
631 were forced to eat the roots of that plant during their flight from the Aïr. Their chief was then a man of Herculean size named Assékal ag Louka; the legend says that his feet were so big that when his pursuers saw the footprints, they preferred to abandon the chase.

The Ăgouh-en-Tĕhlé claim to be originally from Mecca where their remote ancestor received a camel from the Prophet. He was supposed to drink only the milk of the camel, but he committed the sin of killing it. Therefore, they had to flee, and after long years of wandering, they settled in Aïr.

At the time when the Imrad were divided up (1750), they were part of the Issandaten. The Ăgouh-en-Tĕhlé went to the Kel Rela, and the other fraction, the Tégéhé-n-Ĕfis, went to the Tăĭtok.

631 The land over which they range borders on that of the Dăg Râli. It goes from Tamanrasset to Ourchi wadi, then from the Koudia as far as Afrahouhine and Tamaghine.

[651] They pay a tribute to the aménokal, the same size as that of the Dăg Râli, but they do not share captured goats and sheep with him.

They are currently allied with the Dăg Râli and the Relaiddîn.

They took sides against us in the battle of Tit where they had
[648 about ten men killed. During the insurrection of 1916-1918, they
669] rose up, and their women even seized thirty mehari /dromedaries/ belonging to the meharist company at Fort Motylinski. On the other hand, they did not take part in the revolt directly and were the first to ask for mercy.

[161] /195/ Totaling 60 men in 1905, the tribe numbers about 150 persons at the present time.

The Ăgouh-en-Tĕhlé own nearly a thousand camels, which they
[233] graze on the Saharo-Sudanese borders, and 1,200 to 1,400 goats.
[651] Every year they pay a tribute to the amenokal of 12 bags of dates, 6 pots of butter, and the usufruct of 10 goats. Most of the cultivated
[423] land and the foggara of Tarhaouaout and Tahifet belongs to them,
[241] and they have gardens at Ămsel, Tamanrasset, and Talan-Tédit.

631 They nomadize near Ideles, T-i-n Tarabine, Temasint, Aïtoklane, Ȳrokam, Serouanout, and in the Ȳnahef.

[162] They now number 50 men and 102 women. This predominance in the number of women is quite rare in Tuareg tribes.

[233] They own about 350 camels and a thousand goats.

[241 423] The Aïtoklane and T-i-n Tarabine centers of cultivation are their property, but they have been left fallow for several years for lack of manpower.

631 669 They took part in the massacre of the Flatters mission, and the guide Ser'ir ben Cheikh who led it into the ambush of the Iheaouen wadi, had ties in the tribe. They were also at Tit and rebelled as early as December, 1916. They bear the entire responsibility for the assassination of Father de Foucauld and made up [797] the majority of the raiding party which came to kill him at Tamanrasset.

Several reconnaissance missions were launched against them (Sgt. Remiot), which did not prevent them from giving hospitality to Ajjer rebels and taking part in the battle of In Eker with the rebel bands of Chief Abeuh ag Khabelli, one of the biggest robbers in the Tassili.

631 [181] The Aït Loaien form a perfectly undisciplined tribe which must constantly be called back to order and which is always ready to escape from control when we relax our hand a bit.

[651] They pay an annual tribute of six bags of dates to the aménokal.

The Relaiddin. -- The Relaiddin probably came from Aïr, like the Ȳgouh-en-Tehlé, to whom they are related. They camp near them in the northeastern part of the Koudia and go up toward T-i-n Tarabine and Aïtoklane.

[162 651] They number only a dozen tents and about ten able-bodied men. They pay the tioussé to the Iboglan.

[177 233] This tribe was formerly rich and strong, possessing nearly 400 camels at the time of the French occupation; today they count only about 20, and 300 goats as opposed to 1, 500. They owe this state of things to losses which they suffered during the revolt of 1916-1918, and which they could never compensate for.

631 They did not take part in the revolt of 1916-1918. But since
[69] they left the environs of Kidal in spite of the order which had been given them to remain there, they were overtaken and raided by the column of Captain Depommier in the outskirts of Tamaïa.

565 The Iklan-en-Taousit. -- The Iklân-en-Tâousit, still called
644 Kel Koas, were probably former servants of the Imenân; /198/ they
631 made up the sultan's guard and were still dependent on his command at the end of the last century.

Their name means "servant of the tribe." They are said to be
[184] of low birth, and unlike all the other Tuareg, they have no aversion
[241] to working the land. They contract alliances with the people of the Djanet oasis.

631 They are subdivided into Iklân Settafen and Iklân Mellen, and
[162] they include about 180 people, some 60 of them men.

[23] They own about 250 camels and 400 goats which are grazed in the Lower Ahaggar, in the Tâhalra, and in the region of Silet-Âbalessa, as well as in the northeast of the Adrar near Tin Zaouaten.

[24] Much interested in cultivation, they own gardens in the centers
423 of Tigeneouin, Âbalessa, and Tifert, as well as in the little palm grove at Tibeghîn, beside Silet.

[69] During the revolt of 1916-1918, they did not do anything to speak of.

[648] Today they furnish a good part of our mounted troupe.

The Issekkemaren. -- The Issekkemaren, whose name is
563 synonymous with "mixed," were probably from Arab fathers and
631 Tuareg mothers.

They are subdivided into the following eight tribes:

Iheiaouen Hâda
Kel In Rhar'
Kel Tâfedest
Kel Immîdir
Kel Tâzoûlet
Kel I-n-Toûnîn
Kel Téroûrirt
Kel Ouhet

563 [162] They are subdivided into three fractions: Oulad Elias, Oulad Asseroum, and Oulad Fassi, grouping about 120 people.

[233] They possess about 100 camels and 280 to 300 goats. They formerly occupied the small centers of cultivation of Sékaïa and Tagemout, [423 241] which they own, but which they abandoned for lack of water and manpower. Very religious, they are for the most part affiliated with the [795 798] sect of the Tijaniyyah; four or five of them adhere to Senusism /Sanusiyyah sect. Ed./. They have among their number two pilgrims who have made the trip to Mecca, a very rare feat.

[669] In 1904 they were completely raided by Lieutenant Besset and kept out of the revolt of 1916-1918.

The Kel in Rhar'. -- The Kel In Rhar' probably owe their name to the village of In Rhar' in the Tidikelt, where they must have lived before coming to settle in the Tafedest.

[173] /200/ Their oral tradition relates that they were conquered by Sultan Goma and bestowed upon the Kel Rela at the time of the division of the Imrad.

[162] Numbering about 150 persons, they camp on the eastern side of the Tafedest, and also nomadize in the region of Méniet and in the Immidir.

[233] Before World War I they owned nearly 800 camels and 1, 500 sheep and goats. Their camel livestock has now fallen to 200 head.

[241 423] They own gardens at Mertoutek, a little center which belongs to them entirely, and at I-n-Amegal, Déhine, and Abézou.

[795] Like the Ihéiaouen Hâda, they are mostly affiliated with the Tijaniyyah sect.

[669] During the revolt of 1916-1918, they refused to rise against us, which caused them to be raided by the Ajjer Tuareg.

[224] They are renowned as very great hunters of wild sheep.

[65] The Kel In Rhar' annually pay the aménokal six bags of dates and a young camel.

[162] The Kel Tafedest. -- The Kel Tafedest or Kel Tégatoufé (or ant people) are a very poor small fraction including some 50 persons, 18 of them women.

563 They nomadize near the Garet ed Djenoun, the Aseksem, Amegid, and the Adrar Torha; they own about 300 goats and 30 [233] camels. (1938 census, as opposed to 600 goats and 200 camels in 1905.)

[241 423] They are the owners of a few gardens in the Tafedest.

[795] They are quite religious and members of the Tijaniyyah order.

[65] The Kel Tafedest annually pay the amenokal four loads of dates and a young camel.

The Kel Immidir. -- The Kel Immidir, or Kel Mouydir, are still called Iheiaouen-n-Tin-Emma. They are of the same origin as the Iheiaouen Hada and the Kel Tazoulé.

[162] They are subdivided into Kel Terahart and Kel Raris and include about 50 people. They nomadize in the Immidir massif toward Joraf and Tagmout and have areas for nomadization between Ifetessen and In Eker.

[233 469] They are poor people who own about 20 camels and 250 goats. Very good merchants and excellent caravaneers, they hire themselves out to camel owners to provide for their needs.

[162] /201/ The Isselamaten must be added to the Kel Immidir. They are a small fraction of about 15 tents which lives with them and nomadize near Aneserfa, Arak, Ahohor, Tagemout, and Tiredjert.

The Kel Tazoulet. -- The Kel Tazoulet or Dag el Mesk camp in [162 233] the Tazoulet region and near Tazerouk. They number about 225 people and own 285 camels and more than 2,000 goats. They dryness [132] of the region which they inhabit forces them to take refuge in the Sudan when there are no rains in the Ahaggar.

[241 423] They possess gardens at Bloumet, Iberbern Touakkine, and at Tazerouk.

[669] They were in contact with the Ait Loaien and followed the latter in revolt, participating with them in the battles of Tit and the Ilaman wadi.

[795 788] They are quite religious and members of the Tijaniyyah. Four or five of their number have made the pilgrimage to Mecca.

[173] [63] Let us add that the Kel Ahnet claim to be of Beraber origin through Takamat, the servant of Ti-n-Hinan. But the Taitok say that it is not known where they come from, except that they must have inhabited the Ahaggar long before the arrival of Ti-n-Hinan.

[63] The Tégéhé-n-Éfis. -- The Tégéhé-n-Éfis are of the same origin as the Tégéhé-n-Elimen.

They used to nomadize in Aïr and had to leave that country as a result of the murder of the sultan who wanted to force them to pay too heavy a tax. Efis was their chief, and it is he who decided to leave. The descendants of these families thenceforth bore his name.

They formed only a single tribe with the Ahaggaren-en-Tehlé. When Mohamed el Kheir was aménokal, the Tégéhé-n-Elimen came to ask protection from the Ihaggaren -- some say this was under Mohamed el Kheir's grandson, Younès.

During the war which put the Kel Rela and the Taitok in conflict, the Tégéhé-n-Éfis took refuge on the Aïr borders. Afterwards, they returned for the most part, but some ten tents remained in the Sudan.

[162] [233] [241] [423] In 1905, they numbered about 30 tents; in the 1938 census there were 164 persons, 51 of them men. They own 80 camels and 250 goats. They are the proprietors of cultivated lands at Tigenouin, Amsel, Abalessa, and Tahart. They also see to the cultivation of gardens at Tamanrasset, which have belonged to the Imekkeresen (an Imrad tribe of the Ajjer Tassili) for a long time. By rights they should pay the latter a due, but it is never asked for.

They nomadize in the Tahalra (southwest of Koudia) and migrate on the parallel Amsel, Tigeneouin, Tamaïa. The line of demarcation separating their area from /208/ that of the Ahaggaren-en-Tehlé is formed by the Tamanrasset wadi.

They were bestowed upon the Taitok at the time of the distribution of the Imrad, and they have followed their suzerains in all their affairs.

[173] The Kel I-n-Tounin. -- The Kel I-n-Tounin are Issekkemaren. They were given to the Taitok under Sidi's aménokalat (1755) when the Kel Rela tobol was split up, while the Kel Ouhet and the Kel Téroutirt were given to the Tégéhé Mellet.

631 The Kel I-n-Toûnîn owe their name to the wadi near which they ordinarily nomadize in the Tăfedest massif. At the end of the last century they took advantage of the dissensions existing between the Tăitok and the Kel Rela as well as the internal strife of the [651] Tăitok to free themselves of the latter. They moved to the Ăjjer, claiming kinship with them, but they pay them no taxes.

After their surrender to the French, the Tăitok reclaimed them, and General Laperrine agreed to their demand.

[649] They took a big part in the rebellion of 1916 and were the first to rise up, for they were under the direct influence of the Ăjjer.

Taking refuge in Fezzan at first, they set about combating us by launching raids against the fractions under our influence. Later they participated in the combat of Aïn el Hadjadj. Then they went to the Sudan, where they succeeded in taking with them a number of Tăitok, their Chief Amri among them, in spite of the efforts Moussa ag Ămastân made to keep them.

[162] They number about 20 tents which camp in the north of the Tăfedest massif and go up as high as the Ădrar Ifetessen on the foothills of Immîdir.

[582] They are allied to the Tégéhé Mellet by recent marriages.

Famous as good herders, they own about 100 camels and 300 [233 431] goats. They are also good caravaneers who trade on the markets of In Salah, Ghat, and Ghadames.

[241] They have a few gardens cultivated at Ideles and in the Tassili centers of cultivation.

[162] The Iouarouaren. -- The Iouarouaren form a little tribe of about 15 tents, which nomadizes with the Kel Ăhnet in the Adrar.

Some say they are natives of Aïr, others say of the Ăjjer.

193 /210/ When an Ăjjer (or Ifôras) woman had been taken prisoner
631 by the Aïr people, according to Sidi ag Kéradji, it was Ămastân ag Ourzig, maternal uncle of Sidi, who paid her ransom and married her to a Kel Ăhnet; from this union sprang the Iouarouaren. (1)

243 he generally carries with him in his migrations. Wheat raising
262 goes down to the Sudan as far as Timbuktu, Aïr, and a little north of Nigeria; but everywhere it has been introduced recently, due to the influence of the Arabs, who have not abandoned their traditional food.

Béchena is a food they adopted because [412] of their exodus toward the Sudan; they are at the present time much closer to the Sudan than they are to North Africa from the point of view of material living conditions, that is, unless this plant formerly existed in a self-sown state in the Sahara, as Professor Chevalier has assumed, and was one of the principal food resources of its first inhabitants.

Fig. 29. Caravaneer's mortar and pestle.

177 By its agriculture
●241 and its production, the Sahara is completely Negro. Agricultural methods, except for irrigation, /231/ are borrowed from the Sudanese, especially work with the hoe (daba), while North Africa mainly uses the plow which is unknown in the intertropical zone.

252 Béchena is eaten as a cooked flour porridge, as raw flour, or
262 mixed with liquids, water or milk.

Dates also play a large part in the diet of the Tuareg. Every year each family head organizes a little caravan to the Touat or [438 484 512] Tidikelt to bring back two or three loads of poor-quality dried dates which are crushed with a pestle and eaten with camel's milk.

224 The administration fortunately has decided to confiscate these [411 648] weapons.

It is very difficult to get an exact idea of the number of animals killed annually by hunters. But we believe we are close to accurate in giving the figure 300. Thus we say that hunting holds a very small place in Ahaggar Tuareg economy.

226 Fishing. -- Fishing is not done by the Tuareg for the reasons [184] we have given. Only the Issekkemâren and the Iklan engage in it. They fish when the pond water is very low. In the Tassili they dig little ditches on the lower side at water level, leading to little reservoirs where the fish find refuge and are then surely caught.

[251] When fishing has been fruitful, the Issekkemâren dry the fish to keep them for periods of scarcity.

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Chapter 5

Agriculture

• 241 The Ahaggar Tuareg have never attached more than a very secondary importance to agriculture. Their nomadic turn of mind is at the opposite pole from land ownership and still more from exploiting it, which implies sedentary life. There are, however, a number of centers of cultivation in their country; they are of undeniable interest and could be extended more widely if improper legislation did not hinder their development.

177 The creation of most of these centers of cultivation does not go back more than a century. It was accomplished under the in- 241 fluence of Arab groups settled in the Ahaggar. Only the Silet and Tibeghîn oases are much older and probably date from the time of the Imanan sultans who had brought into the Ahaggar some

177 marabouts from the Touat who brought with them the system of
241 irrigation by foggara. The Tuareg later grasped the advantage they could gain from multiplying these centers, and so, at the moment of the French occupation, more than forty centers were being exploited.

423 The enjoyment of land appertains to the people who first culti-
241 vated it. Land of itself appertains to the amenokal, but he leases it
[427 out and in return levies an annual tax -- mesk -- on the harvest, in
651] the amount of four guessa of wheat, or about 10 kilograms per garden. The land may thus have as proprietors Imochar or Imrad, indeed Enaden, but Iklan may not hold gardens.

241 Gardens are not cultivated by their proprietors but by Negro
427 tenant farmers, natives of the Touat or Tidikelt, who are called harratin (singular hartani). An arrangement is worked out between them and the proprietors on the following terms: the proprietor furnishes the hartani two loads of millet a year for his sustenance,
[312] seeds, a hoe, and then pays for digging /245/ the wells of the foggara. Once the foggara has been dug, the hartani is responsible for keeping it up. He sows, waters, harvests, threshes the grain, and keeps one-fifth of the harvest. Furthermore, he has the right to sow on his own account in the irrigation canals and to cultivate several beds of vegetables.

[311 Centers of cultivation are set up on the terraces of valleys when
312 they are wide enough and have old alluvial deposits. The feggaguir
[241] /plural of foggara -- translator/ of the Ahaggar have nothing in common with those of the Tidikelt or those in the Saoura oasis, which pipe water to the gardens from great distances, from the geological faults where it is retained. In the Ahaggar rain water collects in the wadi beds and is stored under the sand. The feggaguir are therefore dug in the wadi bed and seek water at distances varying from one to seven kilometers. The wadi presents a certain slope, and it is necessary to bring the water gradually to the same level or to a level slightly higher than that of the gardens. The feggaguir

312 include a first subterranean part made of numerous wells of depths varying from two to four meters, linked together by a small canal serving as a water conductor; then comes a part on top of the ground in the form of a canal, first at the same level as the wadi, then at a slightly higher level. They empty into the distribution reservoirs (majem), which by secondary canals (seguia) carry water to the gardens to be irrigated.

311 361 [342] These agricultural centers therefore extend along the wadi on both sides of its banks. The cultivators settle near their gardens and live in straw or reed huts or little clay houses.

There are five centers in the high mountains between 1, 500 and 1, 800 meters in altitude, but the majority are located between 1, 200 and 1, 500 meters. Some of them can be lower, such as Silet (730 meters) and I-n-Amegel (1, 030 meters).

245 Some are small date groves such as Silet and Tibeghîn, which have 10, 000 palm trees, Ideles, Tâhârt, and Ăbalessa, but because of its altitude, the Ahaggar does not seem to be very suitable for date growing. The instability of the harratin is also an obstacle to the development of arboriculture which demands continual care. Cultivators who can be here today and gone tomorrow would not be capable of interesting themselves in work from which they could not draw immediate profit. The country would lend itself, however, to rather large-scale cultivation of peaches, /246/ apricots, figs, and grapes. The little center of Tăzerouk has many peach trees, and the center at Tit produces a famous raisin.

134 The Ahaggar soil is of a high quality, owing part of its richness to elements of volcanic origin which make up a large proportion of the alluvial deposits. Furthermore, the climate favors

132 ●241 agriculture so much that the natives obtain two or even three harvests a year.

241 In the medium altitude centers, they sow wheat and barley in December and harvest it in May. Barely finished with this, they sow millet which is harvested at the beginning of October. In between the natives also engage in kitchen gardening: carrots,

turnips, onions, garlic, pimento, beans, pumpkins, native melons, watermelons, various gourds of local origin, and sometimes lentils. These vegetables belong properly to the cultivator and not to the proprietor of the garden. They are consumed by him, for the Tuareg generally disdain them and eat them only when they are staying in the agricultural centers.

But these centers may be handicapped by numerous climatic factors.

Rains are obviously beneficial when they come at the right time; unfortunately, they most often fall in winter or in summer, seasons which do not correspond to the largest growth of vegetation. The plants benefit from them only when the rains are very abundant and the ground can store up water for several months. But still, rainfall must not be too strong, or else it can cause the wadies to overflow and immediately destroy the feggaguir. It then requires several months to reconstruct them and in the meantime the crops which cannot be irrigated dry up on the spot and are completely lost.

Cold can also have a disastrous effect. Winter wheat does not suffer from it but its development is slowed up. It is much worse for arboriculture, for if it is late and comes after the trees have blossomed, which sometimes occurs in January, it is likely to stop pollination completely. Fortunately, trees in arboricultural centers like Tazerouk bloom much later and there are only sudden frosts to fear.

/247/ The wind which blows violently in the spring may also hinder arboriculture by knocking down flowers or young fruits, indeed even fruits which are almost ripe. The great hot summer winds endanger the harvest by the intense drying they cause, unless this difficulty is overcome by abundant watering. Now, it is precisely at this time that the flow of the feggaguir decreases as a result of the heating of the soil and the intense evaporation.

It may thus be seen that agriculture in the Ahaggar is subject to many risks and that the harvests may be very variable. The abundance or scarcity of water causes the seeded areas to vary in

the proportion of one to four. After several dry years some agricultural centers must be completely abandoned. This was the case of Tit, Attoklane, Tahart, Dar-Mouli, etc., in the last few years.

In 1940, 555 hectares of land were seeded. This is the figure for a good year, which can occasionally be surpassed but can also be reduced by more than half.

The population of the agricultural centers, which was 1, 310 people in 1916, was 2, 280 in 1938, which denotes a great effort made in favor of agriculture. This could be realized thanks only to the state of peace due to the French occupation.

Here are the figures for each of the principal centers, according to the archives of the Tamanrasset post (1):

1. Florimond report, 1938.

	1911	1938	
Tamanrasset	150	686	
Abalessa	272	250	
I-n-Amgel	180	206	
Iglen		168	
Ideles	70	160	
Tazerouk	150	148	
Tit	75	98	had to leave for other centers after the summer of 1938.
Tarhaouhaout	140	91	
Amsel	90	66	
Tahifet		39	
Tigeneouin	25	23	
Mertoutek		60	
Hirhafok		80	
Ilaman	10		

162
103

	1911	1938
T-i-n-Ămenser	36	temporarily abandoned
Tifert	50	" "
Essélésékin	30	
T-i-n-Târâbin	15	abandoned

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[648] These figures bring out the weakening of some centers to the advantage of others. Thus, a number of cultivators from Tarahouhaout (where the French post was formerly located) came to settle at Tamanrasset, and the group of little centers in the outskirts of Ăbalessa, Iglen, Tăfarit, etc., has absorbed the groups from other abandoned centers like Tifert, Essélésékin, Ilâman, Tarahananet, etc.

[241
312] Together these centers number about 400 gardens and 80 feggaguir.

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433 The wheat harvested is partly consumed by the cultivators and chiefly intended for export; it is exchanged at the Touat for dates. The total harvests in the Ahaggar corresponds to only one -fifth of the needs of its inhabitants, even in good years.

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433 There are fifteen agricultural centers exploited in the Ahaggar: Tamanrasset, Tărhaouahout, Tahifet, Tăzerouk, Ideles, Ăbalessa, Hirhafok, Iglen, I-n-Amegel, T-i-n-Ămenser, Amsel, Tigeneouin, Talan-Tedit, Mertoûtek, and Esselésékine.

[166] In addition there are twenty-two other centers which have been abandoned for some years as a result of dryness or lack of manpower: Ăttoklane, Ădenek, Ămrah, Ăbezou, Ăglil, Bloûmet, Déhine, Dar Mouli, Ennedid, Innezal, Ilâman, In Ămertek, Ilafok, Outoul, Ouhet, Souaïka, T-i-n-Târabin, Touakin, Teberbert, Tarahananet, Tahart, and Joraf.

2: Briggs E-4, 5 (ca. 1956) 1958 MS25 Tuareg MS25
Hoggar
[P. 229]

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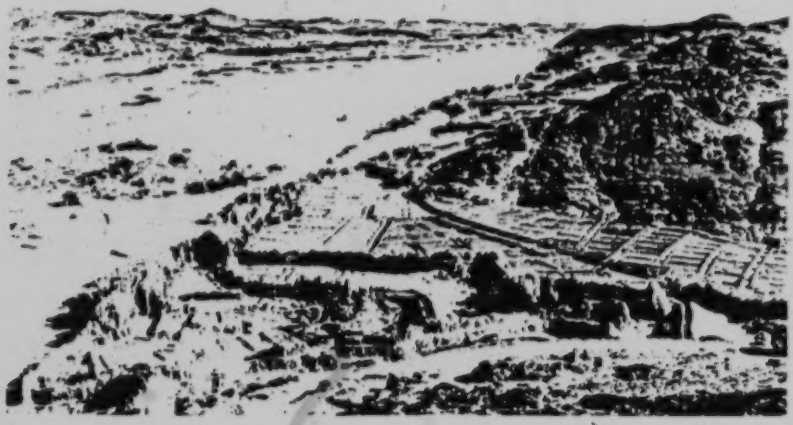

Fig. 14. Gardens at In Amguel, in the Ahaggar (80 odd miles north of Tamanrasset). Here we see the typical disposition of gardens in the agricultural centers of the central Sahara. A checkerboard of square garden plots, separated and at the same time connected by little irrigation ditches, is located just above the dry bed of an occasionally torrential stream, and just below the village, which is perched high enough above it to be safe from freshets and flash floods. (Photograph by Chasseloup-Laubat, courtesy of the *Musée de l'Homme*.)

[361]

Many legends circulate about blacksmiths. They say that 326
because they work with iron and fire, they will go into the fire 565
of hell. They are scorned, first because they devote themselves to a manual craft, a disgrace in the eyes of a Tuareg, and secondly because it is said that they are of Negro origin. It is also claimed that they were pagans and that their conversion to Islamism is not sincere. They are also taken for sorcerers. [754]
The sheik Ben Djellas (see the Appendix /not translated/) says of them: "Blacksmiths hate God and his Prophet, and they betray God and his Prophet." Their ancestor was called Tamamenet.

The blacksmith does not belong to any tribe. He goes where he pleases, wherever he finds work. Sometimes he goes to war, and he is said to fight well, but a noble Tuareg will not cross swords with him.

In the Ahaggar a blacksmith is called "mr'allem," variation 326
of the Arab "maalem." However, there is a word in Tamashek [192]
for him, "inedh," plural "inedhane," but it is not used. /73/

At Tamanrasset I was shown many ancient graves (of the [764]
"chouchat" shape) which, it seems, were the burial places of a tribe of blacksmiths said to have been massacred and died of starvation a very long time ago.

The gardens of the Ahaggar "ar'erems" are worked by the 241
Harratine of the Touat and the Tidilkelt, who bring their tools 312
with them. It is they also who dig the "foggaras," or covered 565
wells, and all the tools that they use come from the Saharan Oases.

Chapter XII

Agriculture. Ar'erems

While in all of the Ahnet no trace of agriculture is to be 241
found, however small, because of the scarcity of wells, whose 361
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output is only enough to water the flocks, in the Ahaggar, on the contrary, a mountainous country where there is some water everywhere, a number of small villages called "ar'erem" ⵄⵔⵔⵉⵎ, plural "ir'ermane" ⵉⵄⵔⵔⵉⵎⴰⵏ, have been built.

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Since the Tuareg, nobles or imr'ad, dislike all manual work, these villages could not have been built without the indispensible help of the Harratine of the Touat and the Tidikelt, whom the Tuareg call "Izeggar'en" ⵉⵣⵣⴰⵖⵔⵏ, meaning "mulattoes." Everything was made by the latter: the wells, /74/ "tounine," which are used for irrigation, as at Tazerouk; the "foggaras," or covered wells, "ifelane," and their irrigation canals as at Abalessa, Tit, and Tamanrasset; the fitting up of springs, as at Tadjemout. The Harratine made the gardens and became khammes of the Tuareg, landowners. They settled in these villages and there built huts of "diss" (Imperata cylindrica) or of "berdi" (Typha angustifolia) and little houses of baked earth.

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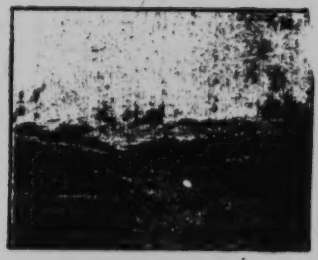
The Harratine grow wheat, barley, and bechna in these gardens. These are the three essential crops, to which they add some vegetables: onions, kabouyas, or gourds, watermelons, and "guerroum" (a kind of long melon which is eaten green, like a cucumber, before it is ripe). Finally, at Tit they /75/ have planted some fine fig trees and a vine which yields a grape that seems delicious at this latitude. Similarly, at Abalessa, there are some vine slips and a fine palm.

Ideles (Koudia)

The gardens, or rather the fields, are enclosed by a hedge to prevent the depredations of the camels that graze free at night. But there are some that do not have this protective barrier, and the Harratine are forced to stand guard at night, turn, and turn about, lighting fires to drive the camels away from the crops.

241 Usually, there are six khammès per field, and each of
312 them has a right to water for one night and one day. The water, brought from the foggara, spreads into the "madjens," or reservoirs, as on the oases, there to be divided among the gardens by means of saguias, or irrigation canals.

[764]



Herhafok Region

In the Left Foreground an Ancient
Grave in the Chouchat Form
(Koudia)

241 The khammès receives as his pay:

1. A fifth of the crop
2. The barley which he sowed in the irrigation canals
3. A load of wheat in winter and a half load in summer, for his personal consumption.

245 In the Ahaggar there are also small oases of palms which were planted by no one knows whom, for example, at Tibedjehine and at Silet (Ahaggar), at Djor'raf, Tafarakrak, and Teguift (Immidir). [423] The Tuareg who own them leave them untended and are satisfied to go and gather the dates when they choose. These palms, which get no care, also have a great mass of dry djerids hanging to the ground, which makes it very difficult to climb them. Perhaps this is to prevent theft of the dates? /76/

From the fact that these palms, even though not cared for, produce dates which, if not of good quality, are still quite

5: Nicolaisen E-4, 5 (1951-1955) 1959
MS25 Tuareg MS25
Ahaggar
Air

262 [222] Even when grazing is good stock-breeding products are less important for food in Ahaggar than in Air as is illustrated in fig. 3 depicting the relative importance of milk food and vegetable food. A small part of the vegetable food is provided by collecting seeds of grasses and herbs, while roots, stems, and berries of wild plants are less significant. The bulk of Tuareg plant food consists of millet, barley, wheat, and dates. In Ahaggar many Tuareg have gardens with wheat and barley cultivated [241] [563] for them by black-skinned agriculturists generally known by the Arab word *Haratin* (*Izzegaren* to the Tuareg). But most Ahaggar Tuareg acquire the bulk of 438 their plant food from caravan trading with the oases of Tidikelt (dates) and with 262 Sudanese villages as far south as Zinder (millet). Even in years of drought they can obtain millet from the Sudan in exchange for rock-salt broken at Amadror north-east of Ahaggar. In Air caravan trading with salt seems less necessary to Tuareg subsistence, although there are also in this country Tuareg who trade with salt from Amadror or Bilma. Most pastoral households however have a fairly regular [234] surplus of livestock, butter, and cheese which can provide for the necessary amount [563] of millet bought in Agadez or south of the massif in Damergou. There are also 241 in Air a great many negroid agriculturists from whom pastoral Tuareg can buy 262 vegetable products. But millet, which forms the prominent part of Tuareg plant [438] food, is grown to a very slight extent by the agriculturists of Air. Dates are important in particular to the Ahaggar Tuareg who acquire large quantities from the oases of Tidikelt. There are also a few Ahaggar clans the members of which own half-wild palms with dates of an inferior quality, as there are Tuareg who have a few palms growing in their garden plots. In Air dates are not so important for food but even there pastoral Tuareg may have some palms. Among the Tuareg of Tassili-n-Ajjer it is very common for pastoralists to sow wheat and barley in the river valleys when these have been heavily flooded (Nicolaisen 1954, p. 83, 88), and this primitive agricultural method was apparently known also to the Ahaggar Tuareg in the past (Duveyrier 1864, p. 372). More recently many pastoral Tuareg [312] of Ahaggar and Air have taken up agriculture by means of irrigation. There seems [321] to be a tendency towards semi-nomadism among the Tuareg who are very dependent on vegetable food derived from agriculture.

The Negroes Of The Sahara.

136 In the above section on Tuareg ecology it is stated that Air climatically and botanically is closely linked with the Sudan. This is true also zoologically as the Air fauna contains a great many species of birds and mammals characteristic of tropical Africa. The bird life of Air seems very akin to that of the Sudanese savannah, and, for instance, guinea fowls are extremely common even in valleys of the northernmost parts of the massif. As examples of tropical mammal life in Air we may here mention that the wart-hog lives in Central Air, and that oryx antelopes

[TEXT CONTINUES ON p. 76]

5: Nicolaisen E-4, 5 (1951-1955) 1959
MS25 Tuareg MS25
Ahaggar
Air

563 601 akin to the system in use among the black-skinned citizens of Agadez. These people draw no distinction between parallel cousins and cross-cousins, while distinct terms for these relatives are characteristic of true Tuareg systems (fig. 8 g).

563 342 The material culture of the Air negroes is marked by both northern and southern traits. The most common type of dwelling is a beehive hut *(tatramt)*, which I have also seen south of Air in the savannah, while similar huts are unknown to the north in Ahaggar and Tassili-n-Ajjer. The huts are often placed within round enclosures which are possibly of Sudanese origin (cf. fig. 15). There are however other types of dwellings in the Air villages. Very common is a square straw hut *(techira)* with a slightly elevated saddle-roof. It is built by the men while the beehive hut is made by women, and both types are frequently used by one and the same household. This square hut differs constructionally from the straw huts used among settled agriculturists in the north. Also rather common is a barrel-vaulted hut *(ehen)* covered with mats (fig. 14). It has the same name and is of much the same construction as the movable huts or tents used by most pastoral Air Tuareg (fig. 5 & 13). It is built by women and seems to have been introduced by pastoral [462] women married to settled agriculturists. Finally there is in some villages a rectangular house *(tafachamt)* with a flat roof. It has very solid walls generally built from stones inserted in and covered with mud. It has various sub-types more elaborately described by Rodd, who considers these houses to be of northern origin (Rodd 1926a, p. 240ff.). They have most probably been introduced from Tassili-n-Ajjer 177 312 or the Fezzan from which regions came also the irrigation system now forming the basis of agriculture all over Air, namely the drawing of water from shallow wells *(anou)* by means of zebus. This system is extremely common in the Fezzan and Tassili-n-Ajjer from where, as mentioned, it was introduced also to Ahaggar. It is not known when it came to Air, but in many villages it has been adopted only very recently. Not so many years ago water for irrigation in most villages was apparently raised by human power, namely by the pole and bucket provided with a counterweight *(aroudit)* (cf. Capot-Rey 1933, p. 322), but this method has now disappeared. It can be considered the oldest irrigation machine and it is no doubt [174] of very great age in Northern Africa including the Sudan. The method however 241 involves much strenuous work and in view of this it may seem quite natural that agriculture in Air was in the past also practised as shifting cultivation without any irrigation. Rodd states that in certain areas of Air rain-grown crops could be raised most years and that in the past a fair amount of cereals seems to have been produced in this way (Rodd 1926a, p. 133). I think this is correct. Certain crops as for instance millet has a very short period of growth; in Ahaggar (Abelessa) millet is sown in June-July and harvested in September, and it is said that it is not watered very much and never to the same extent as wheat grown in winter. It would no doubt be possible to grow millet in many parts of Air without artificial irrigation during the rains, and in fact millet was grown by shifting cultivation not far from Agadez as recently as up to the French occupation. But nowadays culti-

5: Nicolaisen E-4, 5 (1951-1955) 1959
MS25 Tuareg MS25
Ahaggar
Air

culture is never practised without irrigation. Rodd thinks that the Air agriculturists gave up shifting cultivation because they are too poor to-day to risk losing their seed in the event of inadequate or irregular rainfall (Rodd 1926a, p. 133). I rather think the reasons are that the agriculturists of the massif nowadays grow very little millet and have a better irrigation system than in the past. In summer maize forms by far the most important crop, and it needs irrigation which is comparatively easy when using zebus for drawing water. However this may be we can assume that a type of agriculture related to Sudanese shifting cultivation was formerly important to the Air agriculturists, and although irrigation is nowadays used everywhere agriculture in certain places of Air is still a kind of shifting cultivation. Many agriculturists do not resort to manuring nor do they carry fresh soil to the gardens as in Ahaggar. With crop rotation they utilize one and the same plot for a few years but then have to cut trees and brush-wood somewhere else to make a new garden. A new well must then also be dug, but as irrigation wells are rather shallow this work is comparatively easy.

There are in Air certain agricultural implements related to those of Sudanese farming cultures. We must mention in particular a small hoe hafted by means of a thong *(tagoumit)*. It is unknown both in Ahaggar and Tassili-n-Ajjer as well as further north in the desert while extremely common among Sudanese shifting cultivators. Feilberg has classed it with the so-called Old Sudanese Culture established by Baumann (Feilberg 1934, p. 260ff. – Baumann 1940, p. 50ff.; 1944, p. 213ff.). Baumann claims that this culture did not know the sickle, considered by him an implement of the so-called Young Sudanese Culture (Baumann 1940, p. 56ff.; 1944, p. 283ff.). The sickle (Air: *elegesouar*, Ahaggar: *amreh*) is in fact unknown in many Air villages, and is according to my investigations not generally used for the harvesting of crops but for cutting annual grasses to be stored for fodder. In Air the harvesting methods are as follows:– millet is cut with a knife, maize is cut at the root by means of the above-mentioned hoe, while wheat and barley are pulled up with the hands. Similar harvesting methods seem to be known in the Sudan (Baumann 1944, p. 295ff.). As a Sudanese trait we can perhaps also recognize the large clay amphoræ used for the storage of cereals (Rodd 1926, p. 317. – Nicolas 1950a, p. 146).

We can conclude this section as follows:– While the negroes of Ahaggar apparently have arrived in that country later than the fair-skinned Berbers the oldest known population in Air were Hausa-speaking negroes subsisting predominantly as agriculturists. Their original culture apparently was closely related to that of Sudanese shifting cultivators. Contacts with the north and in particular invasions of fair-skinned Tuareg have changed their cultural position. Mixing with the Tuareg they have also changed their physical type, but they are still predominantly negroid. They have adopted a Tuareg dialect but have retained part of their old vocabulary.

5: Nicolaisen E-4, 5 (1951-1955) 1959
MS25 Tuareg MS25
Ahaggar

It is stated in literature that clan territories are grazing grounds reserved exclusively for clan members. Lhote says that nobody has the right to graze flocks and herds in the territories of foreign clans without permission from their chiefs or from the Amenokal (Lhote 1955, p. 279). Kilian also mentions that clan territories are grazing grounds (Kilian 1925, p. 132), and in a study by Malaurie there is a sketch-map of some of the more important territories (Malaurie 1953, p. 399). Nowadays foreign camps are very frequently found in the territory of a clan, and it is said that this might also happen in the past. Possibly the territory of a clan was once reserved as grazing grounds for its members, but clan territories were and are divided into sub-areas the rights to which generally are vested in individual tenants. These sub-areas may be valuable grazing grounds, but most of them have an economic value in other respects also. Some are important hunting grounds for barbary sheep or for the catching of wild donkeys for domestication, others have a value for collecting wild seeds, or they have soil and water suitable for irrigationagriculture. A few areas have all these qualities. I shall briefly mention the sub-areas of the two vassal clans Agouh-en-Tehele and Dag Rali. In the lists (p. 108 f.) are indicated the tenants, the value of their sub-areas, and the annual land-rent paid to the Amenokal, who is the true master of the land inhabited by clans of his drum-group.

For the land-rent *(share-n-amerdal)* paid to the Amenokal the tenants obtain the following rights over their sub-areas:-

1) They can forbid grazing within their area or in part of it in order that plants may germinate and become fully developed. For plants valuable exclusively for grazing domestic animals the period of protection will be up to two months, but certain plants which have seeds valuable for collecting are protected for three months.

2) They have the right to half of all wild donkeys caught in their areas.

3) They have the right to part of all barbary sheep killed. Foucauld says that in certain hunting grounds the hide and the meat of a slain animal must be given to the tenant while the hunter can keep only the head, the paunch, and the intestines (Foucauld 1922, p. 81. – Foley 1930, p. 43f.). My own information agrees with Lhote's statement that the tenants in general have the right to the hide, the head, and half the meat (Lhote 1955, p. 284), but for certain hunting grounds there are different rules (cf. list p. 109).

4) The tenants have the right to dues from the crops of every garden, but for sub-areas of the Dag Rali clan they are now given to the Amenokal. In the Agouh-en-Tehele clan the tenants receive 10 kg per garden from a crop of wheat and barley (grown in winter), 10 kg from a crop of millet (grown in summer), and 4 kg from a crop of tomatos.

Should the rights of tenants be violated, the offenders will be fined by the Amenokal, and the indemnity belongs to him and not to the tenant. In the past there was a fixed indemnity of three goats for violation of protected pastures.

565 /58 cont./ These freed men are no happier for their rise in the caste system, for this liberty is often synonymous with complete destitution.

The economic difficulties resulting from the prohibition of raiding have done more to suppress slavery than law and reason.

174 565 What is to be said on the historic origins of the harratin as an ethnic type? We have already seen that there are two types of harratin.

The former Tuareg slaves are probably originally from the Sudan and the Niger, where they were bought or captured in raids.

The harratin from the Touat and the Tidikelt may have the same origin as the others, but one cannot dismiss the theory that they are descendants, more or less pure, /59/ of an ancient negroid people of the Sahara (1).

1. In this connection, it is useful to read the articles published in the Bulletins de liaison saharienne at Algiers. These were prepared by professors of the University of Algiers and by all the important persons who, in different capacities, have worked in the Sahara. (Editor: Commander Ferry. Administration of the Territories of the South: Government General of Algeria).

565 241 The harratin constitute a most interesting social element in the Ahaggar, because it is they who cultivate the rare productive plots and who furnish the workmen: masons, carpenters, and manual laborers. If they appear at first sight

565 /59 cont./ to possess few intellectual or moral qualities, they
241 are perhaps nonetheless readily adaptable.

The Language

197 The Tuareg speak a Berber language. This language is certainly the strongest link which unites the scattered populations from the regs of the Tidikelt to the banks of the Niger; it is, more than the ethnic type, the element characteristic of these peoples. It is through the language that is maintained what may still be called "Tuareg culture," which survives in the traditions, mores, and superstitions.

This language, which is called "Tamahaq" in the Ahaggar and "Tamacheq" in the Sudan, has several dialects: that spoken by the Kel Ahaggar is called "Tahaggart," thus designated by the Kel Ajjers and the Taïtoks; in the Aïr it is called "Taïrt"; in the Adrar des Iforas, "Tadrak," and the dialect of the Aoullimiden is called "Taoullemmet."

These dialects are very similar to each other; a few local differences in pronunciation distinguish them, as well as certain idioms.

Tahaggart, the language of the Tuareg of the Ahaggar, has been studied the most, chiefly in the noble tribes because, Father de Foucauld said, "the language is pure only as spoken by the nobles."

114 It is a complex language, rich and full of nuances, with a precise and difficult syntax. General Hanoteau succeeded, with the help of Tuareg captured during a battle, in writing a /60/ Tuareg grammar; this was the first formal study of Tamashek.

Dictionaries were compiled by Cid Kaoui and M. Masqueray, but the most remarkable work, which constitutes a summary, is the dictionary of Father de Foucauld. Father de Foucauld's grammar and the texts he has collected afford the best material for studying Tamashek.

191 /62 cont./ In spite of this difficulty in transcription, the Tuareg amuse themselves by transposing the letters in a word, making it utterly incomprehensible for the uninitiated.

[177] At the present time Tamashek is borrowing many words from Arabic and French. Father de Foucauld had already noticed during his time this invasion of Arabic and the way the Tuareg adapted numerous words to their own speech habits.

[212] In the noble tribes, each individual knows how to read and write, but that is not the case with the imrads, for many of the vassals barely know how to write their names.

The richness of the spoken language is greatly declining due to bilingualism and doubtless also because poetry, formerly inspired by the exploits of the warriors, tends to disappear. One may thus realize the importance of Father de Foucauld's work, which permanently recorded a language of oral tradition.

There will certainly come a day when the Tuareg will have to use French to perfect themselves in their own language.

NOTE: Some compound characters.:

[212] =bt =cht =rt =st`

/63/ II

Economy

Generalizations on the Economy of the Ahaggar

241 A country such as the one we have seen in the study of the physical characteristics of the Ahaggar, possessing very limited resources because of the scarcity of water and the poverty of the soil, can only have an agriculture of small and uncertain productivity.

648 /68 cont./ of the underground water level, which often results in the abandonment of a site, does not permit a costly installation. About ten years ago, a former sergeant-major of the Sahara corps settled at Tiguenouine, a small center 70 kilometers south of Tamanrasset: he quickly gave up his idea of farming and became a nomad. Another Frenchman, a retired soldier, nomadizes in the Tin-Zaouaten region; he leads a life like the Tuareg, and his herds prosper.

Officials reside at Tamanrasset, lodged in administration quarters which sometimes have a small garden for family use. The community maintains a large garden where experiments in farming and arboriculture are carried out.

•241 The Tuareg, as we said, are the only landowners; let us now see how they utilize their lands. As in all countries under Moslem influence, the method of agriculture is the "khamassa," with certain local variations. The khammès usually is a hartani,/69/ a Negro originally from the Tidikelt or a freed slave.

The agricultural system in the Ahaggar is supported by the foggara, which should water six to eight gardens. The proprietor of the foggara, generally a Targui, engages one khammes per garden. He will look among the harratin of the village for gardeners who will come to terms with him. An
241 oral contract is made between the proprietor and the khammès,
675 before witnesses. This contract may be summarized thus:

The proprietor agrees, first of all, to provide the land, which he has rented from the amenokal. He must also provide his gardener with water from the foggara he has had dug, with a "mesaha" (hoe), and with the necessary seed. In addition, the proprietor must clear the land at his own expense and must see to the improvement of the soil. He must advance the hartani food in the amount of 60 guessa of millet per year.

In exchange, the khammès undertakes the work in the fields, the threshing, and the upkeep of the foggara.

As "salary" he collects a fifth of the harvest. He also receives the fallen and gleaned ears, the harvest from ten

241
675 /69 cont./ "guemouns" /plots/ situated near the majen (clay basins), and the wheat and barley sown in the séguias /irrigation ditches/ which belong to him.

In addition, the wheat found mixed with the dust of the threshing ground belongs to him by right, as well as the staw and several vegetables that are grown. Lastly, if the flow of the foggara slackens and new wells must be dug upstream, the khammès is paid three guessa of wheat per well dug.

[692] In case of disputes between the proprietors and the khammès, the palavers are held in the presence of the chief of the tribe (on the Tuareg side) and the chief of the village (on the harratin side). The amenokal intervenes upon appeal, but rarely, for these contracts fixed by custom are, in general, scrupulously observed.

The Targui has limited confidence in the honesty of his khammès, an opinion often justified, for the hartani deliberately pushes over ears of grain so he may have them by his gleaning rights. The proprietor does not have the magnanimity of Boaz. Therefore, when harvest time comes, he installs himself /70/ and all his family near his garden in order to make sure that the operations are properly carried out. The khammès must furnish food for the Targui, a heavy burden for the former. That is the custom, which also holds that in case the Targui is prevented from coming, the hartani pays a due of 25 kilograms of wheat to guarantee this right of sojourn.

Another type of contract exists called "aril" in Tamashek and "nous" (half) in Arabic. The net harvest is divided into two equal parts, taking into account the following provisions:

The proprietor Targui must furnish the land rented from the amenokal, a foggara, and a hoe. He provides half of the seed and advances 25 kilograms of wheat, which will be paid back at harvest time; he pays for enriching the land (tiksal= virgin land). The gardener hartani, for his part, agrees to furnish half of the seed and one year of work.

241 675 /70 cont./ This /second/ contract system would appeal very much to the Tuareg, carefree by nature, improvident, and rarely possessing the necessary grain for the loans to the khammès. However, it is very little favored by the harratin, who prefer to have the advance of millet furnished by the proprietor under the first contract system, the right to the personal guemouns and to the gleanings, not counting the little daily thefts.

It is quite evident that these are Draconian contracts for the cultivators, who merely exist and are at the mercy of a bad harvest. The Targui may, thanks to his herds and to barter, survive several lean years, but the hartani cannot. It it not unusual to see the latter get through the period between the depletion of the winter reserves and the new wheat harvest by eating crushed date pits, young shoots of tahli, and sometimes even barley and wheat in the blade.

241 311 Land is seeded according to the amount of water available. When the output of the foggara is low, the cultivated area is restricted. It even happens, after several dry years, that the water table in the wadi shrinks to the point of disappearing. The gardens are then abandoned, the agricultural center deserted. The /71/ cultivators withdraw to a more favored village. When the rains bring up the water levels again, the dead centers may be worked once more.

241 The land is almost never manured in the Ahaggar. A system of preparing the land called "tiksal" in Tamashek is preferred. Each year the hartani gathers a clayey soil from a slope near the gardens. He carries this back, basket by basket, and spreads a thin layer on each guemoun. This virgin soil reinvigorates the cultivated land, which is quickly exhausted because of the irrigation; it contains almost no humus or limestone.

Sometimes, when the distance is not too great, the gardener brings the soil from an old root system of a dead fersig /tamarisk/ or tahla, the only humus to be found.

3|2 /73 cont./ The water flowing constantly from the foggara is accumulated in a basin 8 meters by 4 meters by .40 meters large; these dimensions give the approximate size. From this basin, walled in by earth levees and made watertight by clay, the gardener runs the water into the séguias, which channel it to the guemouns under cultivation, which are inundated.

This irrigation system rapidly exhausts the soil.

The crops are watered every six or eight days, with each of the six or eight gardens dependent on the foggara having its regular turn at the water.

When the irrigation is made from a well (tanout) instead of from a foggara, the water is drawn from the well manually or with the help of a zebu. When the majen is full, the gardener proceeds with the inundation of the guemouns.

241 The cultivable land, which is quickly impoverished, needs rest. The harratin let land lie fallow, but involuntarily, for fairly large areas remain uncultivated because of the lack of water or of seed. It even happens that, the land being exhausted, a center is abandoned for a certain time.

The plants cultivated in the Ahaggar are few: wheat and barley in the winter, millet and tomatoes in the summer in fact constitute most of the production and cover nearly all of the cultivated land. Kitchen gardening is negligible, and in many centers nonexistent.

In the Ahaggar there are five varieties of soft wheat, probably imported from the Touat.

The wheat is sown in October and harvested at the beginning of May. /74/ It is grown on small guemouna about 1.50 meters by 3.0 meters large. It is irrigated every six or eight days. Along the séguias, two parallel lines of wheat are planted. The yield varies from ten to 15 for one. It is about 300 to 400 kilograms per hectare. The total production of the Ahaggar is about 200 metric tons of wheat per year.

Barley is cultivated in the same way as wheat, but only 50 metric tons a year are produced.

• 241 /74 cont./ Millet is sown after the wheat harvest is finished. Two species are found, one called Ahaggar millet and the other Sudanese.

The yield varies from eight to ten for one. The annual production is about 60 metric tons. The ears are rather thick but are looted by birds, above all the Bengalis, called "mange-mil," which originate in the Sudan.

The tomato is the chief vegetable of the region. Several varieties are sown; there may be a native one, but the harratin have long used the seeds given by the commune. They harvest the seeds themselves indiscriminately; there may be some degenerate ones among them. There is usually a surplus production of tomatoes. They are sliced in two, then dried in the sun in order to preserve them for sale and for sending to the Ajjers, the Tidikelt, El-Golea and, above all, to Ghardaïa. The method of cultivating them is most simple: The young plants are thinned out, haphazardly, at distances varying from 30 to 60 centimeters, depending on where the hoe happens to fall. When the tomato plants are grown, the guemoun is an indescribable tangle. It is a very rare gardener who puts up props for the plants.

Nearly all the native gardens have several pumpkins. There are two types, one called the Ahaggar pumpkin, which grows to an enormous size, is yellow, not very sweet, and is less esteemed than the variety called the Metlili pumpkin, which is smaller, greenish, and very wrinkled, and whose meat is much sweeter. The pumpkin constitutes the essential [262] food during the month of October and even during November.

Beans grow marvelously well, but only a few gardeners plant several guemouns of them.

/75/ Agricultural Centers

The Ahaggar has numerous agricultural centers, veritable oases, of unequal importance. The location of these gardens

241 /75 cont./ is always the same: in a living wadi, between two rock shelves. They are to be found, then, within a radius of about 100 kilometers from the upper summits of the Atakor.

The gardens string out along the wadi, using to the best advantage the cultivable and irrigable land. An impressive checkerboard of guemouns served by lines of foggaras and séguias testifies to the industry of the harratin. The green patches of early wheat among the grayish natural vegetation make a curious sight; this verdure seems unreal. The agricultural centers are always found in picturesque surroundings. The villages have rare houses of toubs or of dried bricks, [342] but more common are tahli zéribas /reed shelters/. Misery there is endemic, and the word "destitution" takes on its [511] most absolute sense here.

I have personally known families, one of them with [262 nine children, who knew upon getting up in the morning, 511] at certain times of the year, that they had nothing to eat during the coming day and that it would be the same the next day and the days after that. Only the charity of one of their fellows, scarcely any better off, would save them from starvation.

It is true that lack of foresight is a determining factor in bringing about this destitution, but it is not the only factor; one must also cite the low fertility of the soil, the frequent lack of sufficient water, above all after a long dry period, the conditions of the agricultural contract which in effect prevent the hartani from developing a passionate interest in his land, and, lastly, the limited views and complete lack of initiative that characterize the harratin. It must be noted that the Tuareg are hostile to the development of agriculture; this hostility is scarcely a reasoned one; it is a matter of a kind of nomadic atavism, augmented by a desire to keep the traditional practices intact, and also by a fear of seeing the Ahaggar penetrated by foreigners who, undoubtedly, could make the land produce and, in particular, develop the /76/ palm groves, but who would not be hereditarily subordinate to their authority.

●241 /76 cont./ In connection with the conditions of life in the agricultural centers, I shall reproduce here an extract from notes taken in 1949 during a tour I made in the company of the doctor at Tamanrasset. This year of 1949 was particularly dry and came on the heels of four long dry years.

"After having walked five hours since leaving the Tilokatine wadi, where we spent the night, we came in view of a charming little oasis situated in the Outoul wadi, which
241 has cut a bed through basalt rocks, columns of which are
621 seen along the banks. This was the agricultural center of Tahart.

[162 "There are 63 inhabitants, of whom 17 are children --
164] suffering from trachoma and conjunctivitis. Two foggaras serve to irrigate the gardens, as well as two wells with water drawn by oxen. The output of the foggaras is diminishing; the harratin have tried digging other wells at the head of the foggara, but they found large blocks of stone at a depth of three meters which prevented them from reaching the water table. A long and wearying work, with primitive means.

"There are about 100 palm trees, which give small, meager dates. Nearly all of the trees are encumbered with djebars; these harratin have no idea whatsoever of how to cultivate palm trees. Those trees that now produce grew from pits haphazardly cast in a garden.

"The only winter crops are wheat and barley; no turnips, no carrots, no beans, no other vegetables that could tide them over in the period between the millet and the wheat crops and that would permit them to let the cereal ripen.

"At this time nearly all the harratin are eating green barley and young tahli shoots.

"A brief calculation will show how insufficiently these cultivators are fed, although they do very hard work in a hard climate:

Year 1948.	Yield of wheat for Tahart	1, 500 kilograms
	Yield of millet for Tahart	300 kilograms
		1, 800 kilograms

241 /77/ or 1, 800 kilograms of grain to divide 63 times during
621 365 days, giving scarcely 100 grams a day per person, to which we may add three or four meals of meat per year.

"This year a green louse menaces the grain harvest; in summer a sort of 'mosquito' attacks the millet."

To complete these observations, one must add to the food listed for the harratin the very sweet tea they drink whenever they can, and it must be noted that this year 1949 was particularly bad.

If the wheat, set amid the arid mountains, gives an air of opulence to the village, the cultivator well knows that the production will be insufficient and that the fifth part of it coming to him is already pledged to Mozabite merchants to pay for the different purchases of the year. What to do? Go on farming, for such is life. This stubborn work to coax a little wheat from a hostile soil is most touching and merits a better success; but it would be necessary to educate these Negroes, and that is another story.

[361] Certain of these centers are temporary; the harratin abandon them when the soil is exhausted or when the water is no longer sufficient for irrigation; others are always occupied and under cultivation. The harratin merely cultivate smaller areas during dry years. In the permanent centers, the gardens have fruit trees.

In the appendix is the list of the principal agricultural centers of the Ahaggar.

Animal Raising

233 A land of nomads, the Ahaggar is a region of extensive animal raising. The pastures grow according to the chance of rainfall, and the Tuareg use them with due regard to the growth of the grass. The irregularity of the annual rains obliges the Kel Ahaggar to drive the majority of their camel herd to Sudanese territory, so that about 7, 500 camels graze

787 /117 cont./ She goes to a "debni," a pre-Islamic tomb, lies down on the stones, and says the following words: "Imeguedda enkerguedda," the meaning of which is not known. Putting her ear to the stones, she may hear the news, certainly transmitted by the Kel es Souf. The debni speaks briefly, three times only, and it is not permitted to ask it questions.

The other process requires the sacrifice of a goat. The grass in its stomach is taken out and is made into one or several balls. When night falls the woman goes to a flat place away from all human presence; she throws the balls as far as possible, then lies on the ground and puts her ear against it. If the Kel es Souf are favorably disposed, the news arrives as briefly, but as precisely, as in the preceding method. This process is called "tizomitin." Methods exist to question Fate. They are called "idjehan" and consist of making dots on the sand whose exact number one does not know. The technique differs according to the manner of making the dots. It is something like the card game of patience, for the responses are either "yes" or "no." Some Tuareg know another method to obtain more varied answers, but the apprenticeship for this is long.

241 There are other superstitions, such as that which calls for putting old cooking pots, or else the jaw of an ass, on view in a wheat field in order to have a good harvest. Let us also [262] mention the Negresses' custom of eating cat's thighs in the month of March in order to gain weight.

All of these beliefs should be collected, but that would require long, patient work, which could not be carried out except in a climate of confidence.

771 /118/ One may say that the Ahaggar still lives in a world of magic despite the presence of Islam. This fear of spirits, which seems childish to an Occidental, is very real. "Imagination," Fraser says, "knows how to act on man with as much effect as does gravity, and may kill him with the same certitude as would a dose of prussic acid." The

6:Blanguernon Y-5 (1937-1954) 1955 MS25 Tuareg MS25
Hoggar

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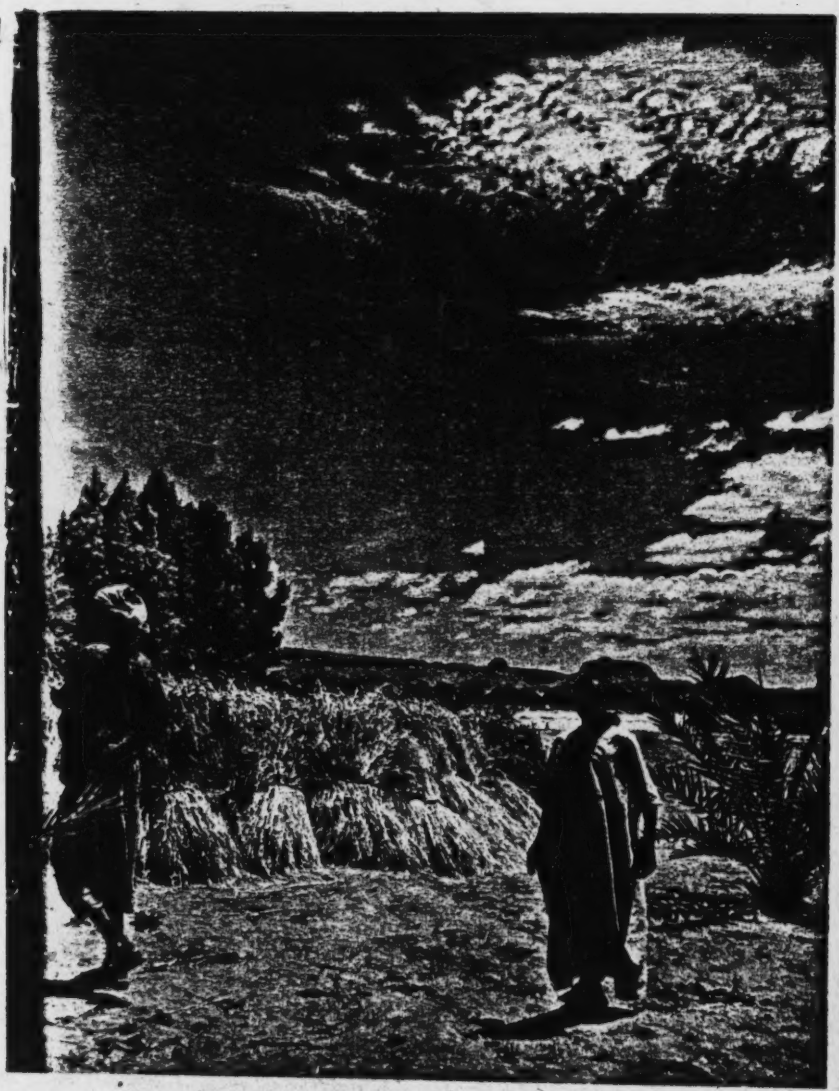

26. The wheat harvest at Tamanrasset.

[p. 213]

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

many tribes of the northern desert, and migrations are on the whole independent of caravan trading. Migrations are to some extent determined by agriculture in cases where the households possess irrigated gardens cultivated on their behalf by the *Ḥarratin* (*Izeggaṛen*). Some goat-camps may move their tents close to the agricultural settlements when wheat and barley are harvested in April. Date palm-owning Tuareg of two vassal tribes (*Iklan-en-tawsit* and *Ikechchemaden*) will also visit the oases of Silet and Tibeghin where dates are harvested in August and September. But the Tuareg visiting these oases will generally not take flocks and tents with them when collecting their dates, which are harvested mainly by black-skinned *Ḥarratin* of Abalessa. It should once more be mentioned that most Ahaggar tribes in dry years keep their camel herds outside of Ahaggar – mainly in Tamesna – and the members of a section have their herds guarded collectively in these distant regions.

The territory of a vassal tribe is generally divided into sub-areas, the right to which is vested in individual tenants. These sub-areas may be valuable grazing grounds, but most of them have an economic value in other respects also. Some are important hunting grounds for barbary sheep or for the catching of wild donkeys for domestication, others have a value for the collection of wild seeds, or have soil and water suitable for agriculture. A few areas possess all these qualities. I have studied the division of the tribal territory into sub-areas only in the two tribes *Dag Ṛali* and *Aġuh-en-tehlé*. In the *Aġuh-en-tehlé* tribe there is a certain correspondance between sections and sub-areas in the way that most sub-areas belong to individuals of the matrilineage which forms the core of a particular section. Consequently the Tuareg of the *Aġuh-en-tehlé* tribe sometimes speak of sub-areas as section territories. However, two tribal sections living outside the tribal territory have no particular sub-areas, and one section has two sub-areas, the rights to which are vested in two individual tenants (cf. p. 149). In the *Dag Ṛali* tribe there are more sub-areas than tribal sections, and some sub-areas have two tenants who belong to distinct tribal sections, members of which all have the right to use these sub-areas (cf. p. 148). When a tenant dies his rights to a sub-area should be taken over by a maternal kinsman who lives in the section to which he belongs matrilineally. Tenants of sub-areas are frequently section-leaders. In the lists p. 148-149 where I mention the sub-areas in the *Dag Ṛali* and *Aġuh-en-tehlé* tribes are indicated the names of tenants, the value of their sub-areas, and the annual land-rent paid to the *Amenukal*, who is the true master of the land inhabited by tribes of the *Kel Ṛela* drum-group.

For the land-rent (*ehéré-n-amaḍal*) paid to the *Amenukal* the tenants obtain the following rights over their sub-areas:—

(1) They can forbid grazing within their area or in part of it in order that plants may germinate and become fully developed. For plants valuable exclusively for grazing domestic animals the period of protection will be up to two months, but certain plants which have seeds valuable for collecting are protected for three months.

(2) They have the right to half of all the wild donkeys caught in their areas.

(3) They have the right to part of all barbary sheep killed. Foucauld says that in certain hunting grounds the hide and the meat of a slain animal must be given to the tenant, while the hunter can keep only the head, the paunch, and the intestines (Foucauld 1922, p. 81; Foley 1930, p. 43 f.). My own information agrees with Lhote's statement that the tenants in general have the right to the hide,

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

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Fig. 108. A camp of two related goat-herding units with their straw-huts (*ikebaw*, of the cylindrical type) placed at a certain distance from each other in order that the two flocks shall not mix. Tasilé-n-Ajjer, the *Kel Uhet* tribe (*Isekkemaren*).

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the head, and half the meat (Lhote 1955a, p. 284), but for certain hunting grounds there are different rules (cf. list p. 148).

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(4) The tenants have the right to dues from the crops of every garden in their sub-areas, but for sub-areas of the *Dag Ṛali* tribe these payments are now given to the *Amenukal* because, it is said, the *Dag Ṛali* Tuareg consider such dues incompatible with Islamic law. In the *Aguh-en-tehlé* tribe the tenants receive 10 kg per garden from a crop of wheat and barley (grown in winter), 10 kg from a crop of millet (grown in summer), and 4 kg from a crop of tomatoes.

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Should the rights of tenants be violated, the offenders will be fined by the *Amenukal*, the indemnity falling to him and not to the tenant. In the past there was a fixed indemnity of three goats for the violation of protected pastures. Nowadays the price is determined by the *Amenukal*. When a tenant dies his rights and obligations should preferably be taken over by a maternal kinsman. Traditionally the usufructs of a sub-area are reserved to people of the same section as the tenant, but should the tenant be identical with the chief of the whole tribe they belong to all tribal members. These traditional rules, however, do not seem to be observed very strictly nowadays except for the hunting of barbary sheep in certain areas. Lhote seems to be wrong in stating that the chief of the tribe has the right to forbid grazing and protect pastures in the whole tribal territory (Lhote 1955a, p. 279). In the two tribes here described this right is invariably vested in the tenants of sub-areas.

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The Ayr Tuareg follow the Islamic rules of inheritance described from Ahaggar p. 137 f., and property marks as in Ahaggar are patrilineally inherited in the way that people take over their father's mark. However, property marks play a less important role in Ayr, where the Tuareg with the exception of the *Igdalen* Tuareg (vassals) do not mark goats, sheep, and cattle. Other tribes of Ayr mark only camels and donkeys, and branding with a redhot iron as well as earmarks cut with a knife are used for these animals. Both types of marks are known as *éjwel*. Some Ayr Tuareg and all Tuareg of the *Kel Geres* group use brands for camels and donkeys, and this seems also to be the case with the *Iwllemmeden Kel Dennek*. Some of the brands used among the *Kel Ayr* are published by Rodd and Nicolas (Rodd 1926a, pl. 21 p. 195; Nicolas 1950a, p. 268 f.). The earmarks used for camels and

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7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

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Fig. 128. Harvested wheat-plot grown without artificial irrigation along a river valley. Tasilé-n-Ajjer.

PRIMITIVE CORN GROWING

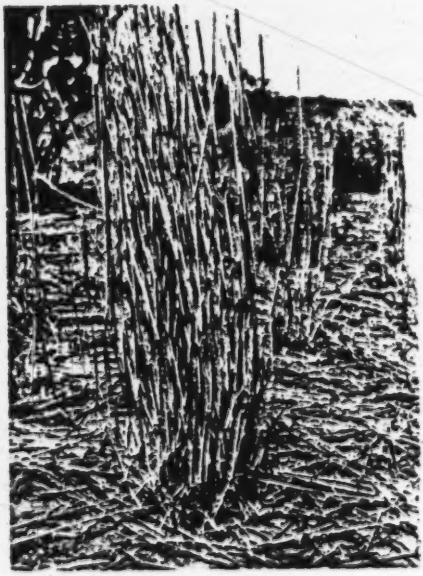

Fig. 129. A close-up of a tuft of harvested wheat from the plot illustrated above (Fig. 128). Tasilé-n-Ajjer.

Agriculture

In the present chapter are described the agricultural techniques as I know them from Ahaggar (Tasilé-n-Ajjer) and from Ayr, and the economic role of agriculture to the subsistence of pastoral Tuareg is discussed. 241

CULTIVATION WITHOUT ARTIFICIAL IRRIGATION

In the Sahara farming is almost exclusively based on artificial irrigation, and agriculture and stock-breeding are largely separated industries. Large-scale stock-breeding necessitates migrations, while irrigation agriculture must be practised by people who live on the same spot almost continuously. But nomadic stock-breeding and shifting cultivation are occupations which go well together at the borderland of steppe and desert in the north where nomads or semi-nomads sow wheat and barley. Lyon says that the bedouins of Tripolitania use a rude plough but more generally a hoe (Lyon 1821, p. 44). However, plough cultivation seems to predominate among the northern nomads nowadays. Shifting plough cultivation is an important subsidiary occupation for most northern nomads in an almost unbroken area between the Atlantic and the Nile or the Red Sea, but it does not penetrate very far into the true desert country. In Algeria I have not seen shifting cultivation practised further south than the oasis of Ghardaya, where nomads under favourable conditions of rainfall sow wheat and barley by means of a simple plough made of a forked piece of wood (Nicolaisen 1950, Fig. 9, p. 70; Capot-Rey & Marçais 1953, pl. II,5 p. 47, Fig. 6 p. 54). West of Ghardaya the plough is known as far south as Tinduf and Beni Abbes, while it is known at Brak of Central Libya towards the east (cf. Capot-Rey & Marçais 1953, map p. 40). Feilberg in one of his early works stated that the plough in Northern Africa is particularly attached to shifting cultivation as a sowing implement (Feilberg 1931, p. 199 ff.). This is in agrement with my own investigations in the Northern Sahara, and it is confirmed by the very remarkable study of Capot-Rey & Marçais, who state that the plough is not fitted irrigation agriculture of the Sahara because of the many fruit trees, notably date palm trees, and because of the whole complicated irrigation system (Capot-Rey & Marçais 1953, p. 51; Feilberg 1931, p. 199). But there seems also to be another reason why the plough is found only in the Northern Sahara: It is particularly fitted for the sowing of wheat and barley, but less suitable for the sowing of millet and sorghum which are the most important cereals grown in the south (cf. Capot-Rey & Marçais 1953, p. 51; Feilberg 1931, p. 201). Barth records that he saw a kind of plough at Auderas in Ayr. It was drawn by three slaves who were driven like oxen by their master (Barth 1857, I, p. 424). 433 241 171 [867]

[p. 183]

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

241 171 I, p. 424). Rodd thinks the implement seen by Barth was clearly an importation from the north (Rodd 1926a, p. 133), and Feilberg assumes that if the plough was once known in this southern area it might perhaps have disappeared together with shifting cultivation (Feilberg 1931, p. 200). All this may be so, for there has been much contact between Ayr and the regions of Fezzan and Tripolitania in the past. But Barth does not say that he saw a plough but "a kind of plough", which may perhaps point to a type of large hoe drawn by men like that described from Senegambia by Feilberg (cf. Feilberg 1931, p. 169 f.).

243 The plough is unknown in the extensive area inhabited by pastoral Tuareg but this is not so with a kind of shifting cultivation. Pastoral Tuareg of Tasilé-n-Ajjer sow wheat and barley along the river valleys when these have been heavily flooded. Sowing is then done in a very simple way:— Holes are dug into the sandy soil, usually merely with the hand, and a few seeds are put into these holes. Wheat and barley thus sown grow in tufts with a space of 0.30 to 0.50 metres between each, and there seem to be about fifty straws in a normal tuft – the largest tuft I have seen contained about 130 straws (cf. Figs. 128–129). The plots cultivated in this way are generally very small, and the scattered wild plants growing in the plot are not always removed before sowing. The corn plots are left completely to themselves until harvesting, which is done with a sickle (Fig. 143). Primitive corn growing of this type cannot be practised continuously from one year to another in Tasilé-n-Ajjer, and the Tuareg of that region say that a household never grows enough corn in this way to meet its annual needs.

[178] The primitive method of corn growing without artificial irrigation is unknown in Ahaggar nowadays, but it seems as if it was known in the past (cf. Duveyrier 1864, p. 372), and the Ahaggar Tuareg have a particular term (*tawgest*) for a field cultivated without artificial irrigation (cf. Foucauld 1951–52, III, p. 1466).

Rodd states that rain-grown crops could be raised most years in certain parts of Ayr and that in earlier days a fair amount of cereals seems to have been produced in this way in Ayr (Rodd 1926a, p. 133). There is little doubt that this statement is correct, and I think that even in parts of Ahaggar millet could be raised without irrigation in most years, for millet has a very short period of growth.

[221] In Ahaggar (at Abalessa) it is sown in June-July and is harvested in September. Though millet plots are irrigated they are never watered much, and never to the same extent as wheat and barley which are grown in winter. In regard to Ayr, millet in southern villages of the Massif very frequently ripens in two months, and late in summer, at the end of the rains (*akasa*) or in the early dry season (*garat*).

[262] I have frequently seen well-developed small plots of millet and sorghum around deserted Tuareg camps where a great many seeds are always lost on the ground during the pounding and winnowing of millet for porridge. These self-grown plots, however, are not utilized by the Tuareg as the comparatively

[134] small yield is quickly eaten by the numerous millet-eating birds. Owing to these birds it would be difficult for pastoral Tuareg to grow cereals in flooded valleys like the Tuareg of Tasilé-n-Ajjer, and it is partly for this very reason that the sedentary agriculturists of Ayr grow very little millet. Millet could easily be raised without artificial irrigation during the rains, and, in fact, millet was grown by shifting cultivation not far from Agadez as recently as up to the French occupation of Ayr.

245 In addition to the species of grain mentioned above there is one very important plant which can be grown without artificial irrigation, namely the date palm. In Tasilé-n-Ajjer there are river valleys

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

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Fig. 131. A *foggara* canal (*dfell*) dug into the sandy river bed from where it is led into the gardens of the valley terrace. Southern Ahaggar, *Tafaut*.

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423 In Ayr there are also a few pastoral Tuareg who own date palms growing in river valleys, e.g., people of the *Imezzureg* tribe of the *Kel Ferwan* drum-group. These date palms, like those growing half wild in Northern Tuareg countries, yield very small dates of a quality inferior to those grown in the oases under constant supervision by agriculturists. Such dates are used only for local consumption.

IRRIGATION AGRICULTURE IN AHAGGAR

241
175 Irrigation agriculture has been practised since ancient times within certain territories now inhabited by the Northern Tuareg. As early as in Roman times there is reference to *Rodames*, *Rat*, and certain oases of the Fezzan, which were visited by Roman Expeditions (Lhote 1955a, p. 113 f.; Duveyrier 1864, p. 249 ff., 266 ff., 275 ff., 455 ff.). Lhote thinks that the oasis of Abalessa in the lowland west of the Ahaggar Massif was also visited by the Roman general Cornelius Balbus (Lhote 1955a, p. 88 f., 113 f., 286), but this, perhaps, is to be doubted. In the writings of Medieval Arab authors there is apparently no reference to oases within the Ahaggar country, though oases in neighbouring parts of the Sahara are mentioned.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

In literature there seems to be no reliable information about the existence of irrigation agriculture in Ahaggar until Duveyrier, who states that agriculture did not obtain a fixed position in the economic life of the Ahaggar Tuareg until the reign of the *Amenukal Elkhaj Akhmed* (1830–1877) (cf. Duveyrier 1864, p. 369). This statement is confirmed by most agriculturists and pastoral Tuareg in Ahaggar, who claim that prior to *Elkhaj Akhmed* irrigation agriculture was not practised in Ahaggar. During the reign of this *Amenukal* irrigation agriculture by means of the subterranean aqueducts known to the Arabs as *foggara* (*éfeli*, pl. *ifelan*) was introduced by *Ahl Azzi* Arabs and negroid *Ḥarratin* from the Tidikelt oases. Some people of Ahaggar claim that another irrigation system was introduced about the same time, namely irrigation wells from which water is drawn by oxen and donkeys. This system, known as *tanut*, is said to have been introduced by agriculturists from Ġanet (Djanet) (the *Kel Ġanet*). It should be noted that there are certain traditions which claim irrigation agriculture to be older in Ahaggar. One tradition says that it was practised at Silet-Tibeghin by Arabs who immigrated from Tawat to cultivate by means of the *foggara* system even during the reign of the *Imenan* (Lhote 1955, p. 286 f.). Another tradition, recorded by Foucauld, states that irrigation farming was known at a very remote date by the *Isebeten* – a pagan people said to be the ancestors of the oldest vassal tribes of Ahaggar (cf. Foucauld 1951–52, II, p. 535 f.). Traditions of the age of irrigation agriculture in Ahaggar are conflicting. If it was practised long before the reign of *Elkhaj Akhmed* by the ancient vassals, I believe that water was raised by human power, namely by the pole and bucket provided with a counterweight. For this system, which is known as *ajudid*, is said to have been very common in the past. It is extremely rare nowadys, and I have only seen it once at Terhenanet. There can be no doubt that this simple irrigation method is a very old one in North Africa, where it is more widely distributed than all other types of irrigation methods (cf. Capot-Rey 1953a, map VII p. 320). The very wide distribution of this system elsewhere in the Old World points to its great age, and it is perhaps to be considered the oldest true irrigation machine.

A few Tuareg in the northern groups practise irrigation agriculture, which does not seem to be one of their traditional occupations. Tuareg irrigation farmers are found mainly in the Fezzan, but mention should also be made of the people of three noble tribes, namely the *Ilemteyen* (living at Rat), the *Ikadeyen* (at Tit in Ahaggar), and the *Kel-ahem-niellen* (roaming pastoralists north of Ahaggar or settled farmers at the oasis of Infer in Tidikelt). These sedentary or semi-sedentary noble Tuareg were originally true pastoralists, though but little is known of the original mode of livelihood of the *Ikadeyen*. A few individuals or families among the Ahaggar vassals have more recently taken up irrigation agriculture in addition to stock-breeding. There seems to be a growing tendency towards semi-nomadism in Ahaggar nowadays. There may be several reasons for this. Thus one can point to the decline of caravan trading and to the fact that pastoral Tuareg cannot so easily get the true agriculturists to cultivate for them. The true agriculturists of Ahaggar comprise the *Ḥarratin* (*Izeggaren*) of Tidikelt, who have mixed with the manumitted slaves now also known as *Ḥarratin* (*Izeggaren*), a few fair-skinned *Ahl Azzi* Arabs, and the *Kel Ġanet* who are predominantly black-skinned. All these agricultural people tend to mix with each other and also with tribes of pastoral Tuareg.

There are at present about 25 agricultural settlements in the river valleys of Ahaggar. Apart from the administration centre of Tamanṛaset (1600) and the oasis of Abalessa (547) these agricultural

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

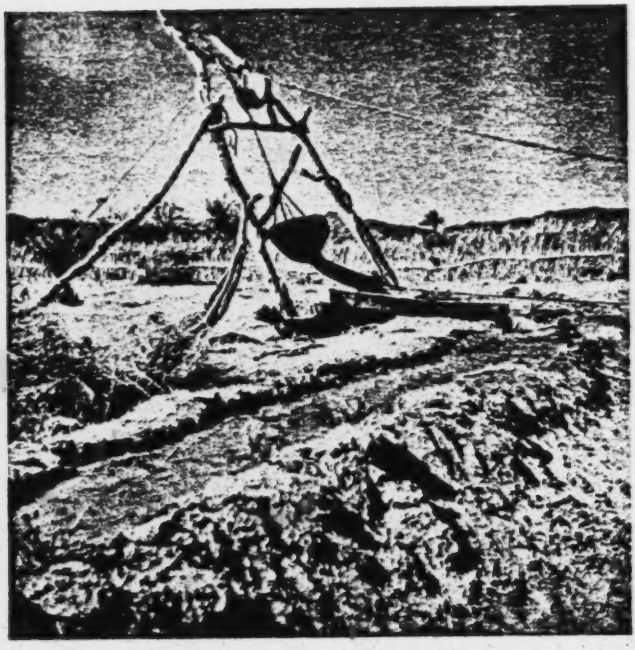

Fig. 132a. The irrigation system known as *tanut*. Ahaggar, Amsel.

settlements contain less than 300 individuals, the majority not even a hundred (cf. Lhote 1955a; p. 292). Most agricultural settlements comprise only a few houses built of stone or mud, or a few straw-huts (cf. p. 327 ff.). The agriculturists of these small settlements generally keep some goats and sheep, have donkeys, which are important beasts of burden to all farmers of the Sahara oases, and in certain families there are one or two zebus to raise water from irrigation wells. A few agriculturists may be characterized as semi-nomads. This is the case of some inhabitants of Abalessa who guard their flocks at some distance from the village. Some of these agriculturists, who were formerly Tuareg slaves, even make skin-tents like pastoral Tuareg.

The subterranean aqueducts known to the Arabs of the Sahara as *foggara*, to the Tuareg as *ifelan* (sing. *éfeli*), constitute by far the most important irrigation system used in Ahaggar. However, these *foggara* canals cannot be compared with the large extensive aqueducts of Tidikelt though their introduction to Ahaggar is due to the immigration of agriculturists from that area. The Tidikelt *foggara* are very large aqueducts which are dug into water-bearing strata which can be situated at a considerable distance from the oasis (cf. Capot-Rey 1953a, p. 324 ff., Lô 1953 & 1954; Chaintron 1958). The Ahaggar foggara are generally very short (about one to two kilometres, or shorter), they are not

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

Fig. 132b. Cf. text Fig. 132a.

deep, and are dug into the sandy river bed to lead its water to the gardens of the valley terrace. A map of the foggara aqueducts placed in the river valley of Tarhawhawt is reproduced by Capot-Rey (Capot-Rey 1953a, Fig. 18 p. 328). There are many advantages attached to the use of foggara systems of the Ahaggar type, for once the aqueducts are dug water automatically flows to the garden. But there are also disadvantages. If a foggara valley is heavily flooded after rains and changed into a roaring stream, the aqueducts are destroyed and the crops also. In general it will be necessary to abandon a foggara system after some years, as it must be cleaned at intervals and in time it becomes too dangerous to work in them as subsidences may occur and kill workers. It may also happen that a river valley is not flooded at all for a period of years when it becomes essential to move to another valley, rich in water under the sandy river bed, to make a new foggara there. For all these reasons deserted foggara systems are common in the river valleys of Ahaggar.

The *foggara* system is unknown south of Ahaggar and has on the whole a rather limited distribution in the Sahara. One reason for this is perhaps that the construction and maintenance of the aqueduct imply the agricultural co-operation of several households. This is not the case with the other common system in Ahaggar, the use of wells (*tunin*, sing. *tanut*) from which water is raised by animal traction. The wells are usually shallow and not very difficult to dig out, and the maintenance of the whole system is usually limited to occasional mendings of the zebu's harness and of the large waterbag. While a foggara canal is always used for the irrigation of several gardens (6–12), the wells are used for single gardens. The irrigation wells are dug into the valley terrace so that they are not destroyed by a flood, and in dry years watering from wells is considered the better system. But in the period when crops need much water irrigation by means of wells is hard work for the garden owner who must drive his ox all day long.

Irrespective of the system resorted to irrigation of a garden is done in the same manner. Water from the *foggara* aqueduct or water raised from well flows into a large basin (*tihemt*) through a canal

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

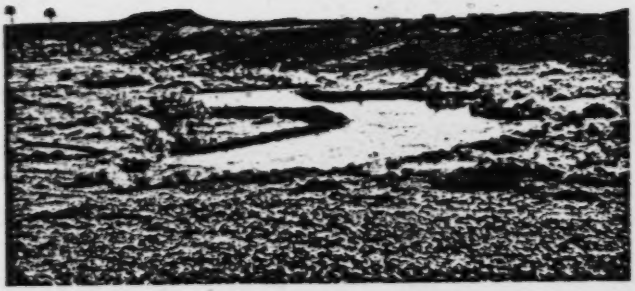

Fig. 133. The large water basin (*tihemt*) from which water is led into the gardens. Ahaggar, Abalessa.

(*teɣuhamt*, or *tahaft*) from which another canal (*tahaft*, or *teɣuhamt*) leads water out into the garden, which is always divided into a large number of garden beds (*igemmunen*, sing. *agemmun*) surrounded by low ridges and separated by narrow irrigation canals. The large water basin serves to regulate watering, which outside of the very cold season is done during the night. A flat stone with a hole in its middle and known as *anefif* is placed between the basin and the canal leading water into the garden; water for irrigating the garden flows through this hole when irrigation is needed at night, while the hole is closed by means of a cotton stopper during the day. The basin is thus filled with water during the day and its water runs into the garden at night (cf. Figs. 131–136).

The irrigation systems described are most important for the cultivation of the winter crops of wheat and barley. The Tuareg word in Ahaggar for wheat is *éred* which is a collective name for several types of wheat known as *elkhamra*, *elmansuri*, *amekkawi*, *ɣati*, and *menga*. These special names seem to be derived from Arabic (cf. Foucauld 1951–52, III, p. 1058, 1211 & IV, p. 1789; Maire 1933, I, p. 246). According to Maire these types of wheat belong to the species *Triticum aestivum*. I have never myself seen fully-grown wheat in Ahaggar and was thus unable to collect ears for identification by botanists, but seeds brought home from Ahaggar and Tasilé-n-Ajjer have been identified by Dr. Hans Helbaek as belonging to common bread wheat. Barley is known to the Tuareg as *timzin*. Threshed seeds brought home from Ahaggar have been identified by Dr. Helbaek as belonging to the six-rowed type (*Hordeum vulgare*, though some, he thinks are perhaps of the two-rowed type (*H. distichum*). Barley, like wheat, is a winter crop though less common. At Abalessa I was told that two thirds of the seed-crops grown in winter were wheat, while only one third was barley.

Wheat and barley are grown in the same way. Sowing is done in the autumn (*tober*), and the seeds are put into the garden beds with the fingers. Harvesting takes place in the month of April (*ibri*) and is performed with a sickle (Fig. 143). The growing of wheat and barley is a very strenuous task for irrigation agriculturists. Watering is done for the first time immediately after sowing. When I stayed at Abalessa, in the month of January 1955, the tender plants of wheat and barley were watered two days in succession, and the 10–12 gardens belonging to the same *foggara* were irrigated in succession in this way. At that time of the year the plots are not generally watered at night because of the cold temperatures which may be below zero.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

temperatures which may be below zero. At a later date the plants of wheat and barley are watered less frequently, and watering ceases completely some time before harvesting in order that the plant may ripen more easily.

The agriculturists of Ahaggar do not manure the garden plots used for wheat and barley. Only a new garden plot never previously cultivated is manured, and when such a garden is made the wild vegetation of grasses, herbs, bushes, and trees is often set on fire. Wheat and barley can be grown in the same garden plot for three or four years in succession, and the soil then needs at least one year's rest. In this way, the same garden plot can be kept under cultivation for many years without manuring: this continuous cultivation on the same spot with a one year's rest for each three or four years cultivation is possible partly because there is a certain crop rotation with other plants grown in summer, but mainly because the agriculturists during the period wheat and barley are grown carry fresh soil to their gardens. This is done not only before sowing but also throughout a long period of the winter when the plants are tender and green. When I stayed in the settlements of Abalessa and Amsel in the months of January and February (1955), all agricultural households worked strenuously from morning to night carrying soil to the green garden plots of wheat and barley. The soil was carried in plaited baskets (cf. Fig. 135) on the head, or in bigger baskets carried by donkeys. The soil was left in small heaps (one in every garden bed) to be spread over and between the green plants (cf. Fig. 137). This extremely strenuous work, I was told, would continue until the month of March.

In spite of the fact that cultivation in Ahaggar is done intensively and much work is connected with it, the yield of winter crops is not a very considerable one. In Abalessa it is said that seed-corn of wheat and barley will normally amount to about 50 kgs, and about 500 kgs is to be considered a normal yield, though certain gardens which are extremely well cultivated may yield more and in rare cases up to one thousand kilogrammes. The gardens I saw at Amsel and Taṛhawhawt were smaller than those seen in Abalessa. At Taṛhawhawt the quantity of wheat and barley sown, was said to amount to about 35 kilogrammes.

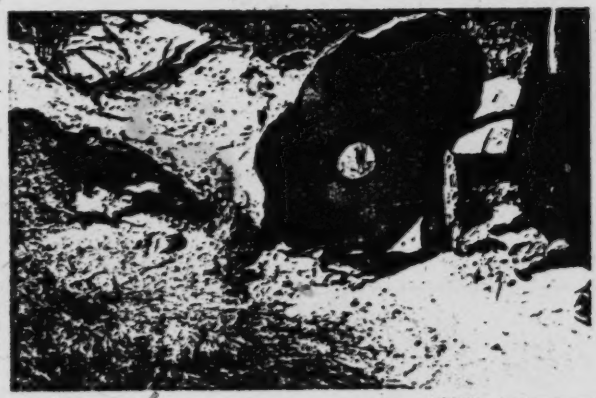

Fig. 134. The flat stone (*awṛâf*) inserted between the water basin (*tikawt*) and the canal (*tejuhamt*) which leads water towards the gardens. Irrigation stops and the basin runs full of water when a cotton stopper is put into the round hole in the middle of the flat stone. Ahaggar, *Ahl Azzi* Arabs.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

Fig. 136. Irrigation of a young wheat-plot. The canal ridges are opened with a hoe in order to let water penetrate into the garden beds. Ahaggar, Abalessa.

to be used for dyeing skins red (cf. p. 282). Maize (*Zea mays*) is also grown as a summer crop in some of the cultivation centres; it is called *engafulé*, or *engafulé masri* (masri = Egyptian) because it is said to have been introduced from Egypt.

Tomatoes (*tomatem*; *Solanum lycopersicum*) are grown mainly in summer and constitute a very important crop. The ripe fruit is sliced and left to dry on a layer of straw in the garden. They are crushed and pounded and are added to various dishes, e.g., the so-called kuskus (*keskesu*, cf. p. 247). Various types of melons and gourds are also grown in summer, e.g., the water melon (*talegezt*; *Colocynthis Citrullus*), a type of ordinary melon known as *tétakelt* or *tazenut* (*Cucurbita* sp.) which is frequently sliced and dried in the same way as tomatoes, and a kind of large gourd (*kabuya*; *Cucurbita maxima*). Certain other vegetables are grown in most gardens, notably various kinds of onions (*téskert*, *Allium sativum*; *éfeleli*, *Allium cepa*) and a kind of beans known as *tadellak*. A few plants are grown as spices, e.g., saffron (*tanermit*, *Crocus sativus*), red pebber (*chitta*, *Capsicum annuum*), or for tea-admixture, e.g., the mint (*émerner*, *Mentha piperita* var.) and a plant known as *lahabok* which is said to have been introduced from the Sudan. Two very poisonous plants are also grown in certain gardens of Ahaggar, namely *éfelehleh* (*Hyoscyamus muticus* ssp. *falezlez*), which also grows wild in the lower country (cf. p. 178), and *burzig* (*Datura Stramonium*) (cf. Maire 1933, I, p. 191 f.). Foucauld mentions two other plants grown for their medicinal value (*ibedliwen*, *Trigonella foenumgraecum*; *tikannin*) (Foucauld 1951–52, I, p. 33 & II, p. 812). A kind of wild salad (*tamaghé*) is also grown in the gardens according to Foucauld (Foucauld 1951–52, III, p. 1170). Potatoes (*Solanum tuberosum*) are now grown in some of the mountain oases – mainly for selling to Europeans at Tamanrasset. Among other cultivated plants found in the gardens of Ahaggar mention can be made of the following species after Maire:—

Lepidium salicum, *Brassica Rapa* & *B. oleracea* (*aharet*), *Linum usitatissimum* (*ilatelé*, or *anarka*), *Medicago sativa*, *Pisum arvense* (*demchi*), *Vicia Faba*, *Lens culinaris* (*elredes*), *Vigna catjang*, *Cori-*

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

243

Fig. 137. The fresh soil carried to old gardens is placed in small heaps to be spread out between the tender plants of wheat and barley. Ahaggar, Abalessa.

24/ *andrum sativum*, *Cuminum Cyminum* (*azkar*), *Daucus Carota* (*ezzerufet*), *Cucumis melo*, *Lagenaria vulgaris* (cf. Maire 1933, and particularly Maire 1940, p. 401).

245 [262] In addition to the above-mentioned plants there are various types of fruit trees which do not play any considerable rôle for food. The gardens contain very few date palm trees (*tazzayt*, *Phoenix dactylifera*) and there are no palm trees of any value in the gardens situated in the upper mountain zones where the fig tree (*tahart*, *Ficus carica*) thrives much better than in the lower country; the figs are [251] consumed fresh, or they are put on strings for drying, common practise elsewhere in North Africa. The [386] pomegranate (*terrummant*, *Punica Granatum*) is grown in some gardens; its fruits are eaten, and they are also used for dyeing skins (cf. p. 282). Grapes (*tezzebibt*, *Vitis vinifera*) are also grown in some gardens.

Maire mentions the cultivation of the peach (*Prunus Persica*) and the apricot (*Prunus Armeniaca*) (cf. Maire 1940, p. 401). These fruit trees have undoubtedly been quite recently introduced for Foucauld states that they are not grown in Ahaggar (cf. Foucauld 1951–52, I, p. 79 f.).

243 423 There are nowadays many agriculturists who have their private gardens so that they cultivate their winter crops and their summer crops entirely for their own use. But most agriculturists grow winter crops of wheat and barley on behalf of the Tuareg who are then the true garden owners.

[312] [476] Agriculturists who cultivate their gardens on their own behalf frequently irrigate crops by means of draught animals (zebus) which raise water from wells, but there are also some farmers who cultivate independently without any contract with pastoral Tuareg and nevertheless belong to a *foggara* team.

243 It can be estimated that an independently working agriculturist obtains a total yield of about 700 kilos of wheat and barley grown in winter. Of this yield he gives 10 kilos to the *Amenukal*, or to the

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

of this yield he gives 10 kilos to the Amenukal, or to the 243
Tuareg who has territorial rights (cf. p. 191), while the yield of one garden bed – that is about other [65]
ten kilos – is given to a blacksmith who in return mends hoes and other agricultural implements. The [962]
necessary amount of seed-corn, comprising about 50 kilos, should also be withdrawn from the winter
crop yield so that his total net profit is about 630 kilos of wheat and barley. To this amount of cereals 241
can be added the yield of summer crops (millet, sorghum, maize, tomatoes, and other vegetables) for

243

Fig. 138a-c. Grown cereals from Ahaggar.
a. Millet (*dudil*) (*Pennisetum typhoideum*). b. Two types of sorghum (*above, tafsut*).
c. Maize (*aggafidi*) (*Zea mays*).

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

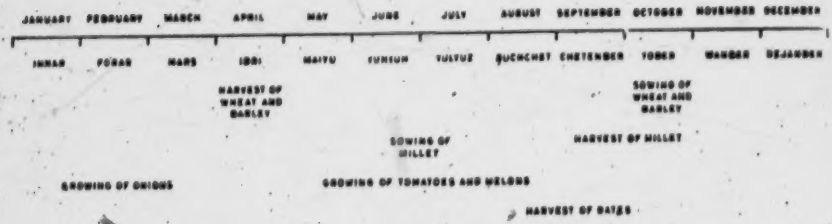

Fig. 139. Horticultural calendar from Ahaggar.

The Tuareg and the negroid agriculturists have a lunar calendar of twelve months corresponding to the Arab calendar, but a lunar calendar has no practical value for the indication of seasonal agricultural activities. The Julian Calendar is known to some people of Ahaggar as well as to other Berbers of the Sahara and the Atlas. Tuareg names of Julian months are given above. Very few people in Ahaggar know the exact beginning and the end of the twelve Julian months, but a few names are used as seasonal terms: *innar* "midwinter", *mars* = "beginning of spring", *ibri* "early harvest" (of wheat and barley), *maiyu* "beginning of summer", *tober* = "late harvest" (millet).

which no definite figures can be given, while the yield of fruit trees growing in the garden plot does not necessarily belong to the agriculturist. These trees frequently belong to pastoral Tuareg.

I think it can be estimated that an agricultural household with its own garden produce about a thousand kilos of vegetables food products annually for its private use. We can add that though the members of an agricultural household live mainly on vegetable food products they also acquire a certain amount of food from livestock, which normally comprises a few goats and sheep, and perhaps one or two zebus. Conditions of stock-breeding are not always favourable to people who live continuously on the same spot, but it is advantageous to the agriculturists of Ahaggar, who live close to valleys with some pasture, that they are able to feed their animals on green garden products when pasture is badly developed and thus avoid the disaster of a drought. It is also an advantage to most agriculturists that they do not have to water their animals which can drink freely from the irrigation canals. The agriculturists can kill a few goats or sheep annually, they obtain milk and a little butter to be used mainly as a sauce for bread and porridge, and they make cheese of the *awles* type (cf. p. 224), but they never make cheese from fresh milk as do many pastoral Tuareg when milk is abundant. The agriculturists also breed fowls and pigeons, and some of them have an important meat supply from hunting with steel-traps (hares, jackals, fennecs, and ravens). Collecting, on the other hand, is of little or no value to irrigation farmers of Ahaggar.

The economic position of agriculturists who work without any particular obligations towards pastoral Tuareg is tolerably good. It is less favourable to those who grow winter crops also on behalf of the Tuareg, as do most cultivators. Some of them irrigate the garden plot with water raised from wells by oxen which may belong to the cultivator or to the Tuareg. But most agriculturists who work for the pastoral Tuareg irrigate by means of *foggara*. It is very strenuous work to dig a *foggara* canal, and co-operation is needed not only for this but also for the maintenance of the whole irrigation system. The gardens are individually tended by the agriculturists, who co-operate in the *foggara* work under the leadership of a headman known as *amrar n efeli*, that is "chief of the *foggara*". This headman

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

241 312 466 476 appointed by the Tuareg garden owners and is rewarded by a garden of his own for his responsibility in supervising all co-operative work. The unit of agriculturists co-operating at the same *foggara* may or may not correspond to an extended family. The agriculturists co-operating on any large *foggara* irrigating ten or twelve gardens frequently represent two or three distinct families which are not linked to each other by kinship bonds. The cultivators of a *foggara* comprising nine gardens at Taṛhawhawt belong to three distinct, unrelated families. This is quite natural in view of the fact that contracts between the Tuareg and the cultivators are made individually.

[675] 423 There may also be no kinship bonds between the pastoral Tuareg who have gardens at the same foggara, and there are even Tuareg who own two or three gardens situated in widely separated river valleys of Ahaggar. But Tuareg garden owners of the same foggara frequently belong to the same tribe or even to the same tribal section. When a garden-owning Tuareg dies, his garden will generally pass to somebody within his family, but there seems to be no fixed rules governing the transference of gardens.

[814] [828] 466 675 423 241 The individual contract between a Tuareg garden owner and his cultivator is made for a period of six months – the period of growth for wheat and barley. The agriculturist is responsible for all garden work, and the Tuareg garden owner has the following obligations:—

(1) To supply his cultivator with a hoe every year, or every two years in case a very good hoe is given.

(2) To pay for repairs of the *foggara* system, or for the digging of a new *foggara*. This payment is known as *almarsor* and consists of two kilos of cereals or dates every working day until water reaches the garden.

(3) To pay for the making of garden beds. This payment is known as *éhéré n egalab*, and is made only once as long as the garden remains on the same spot. When a garden is moved after a period of three or four years the payment must be made again. It varies with the size of the garden and the quality of its soil; in general it consists of 15–25 kilos of cereals.

243

Fig. 140. Millet (*éndil*) of very high growth. It is said that this particular millet type was introduced to Ahaggar from the south – possibly from Ayr. Ahaggar, *Ahl Azzi* Arabs.

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

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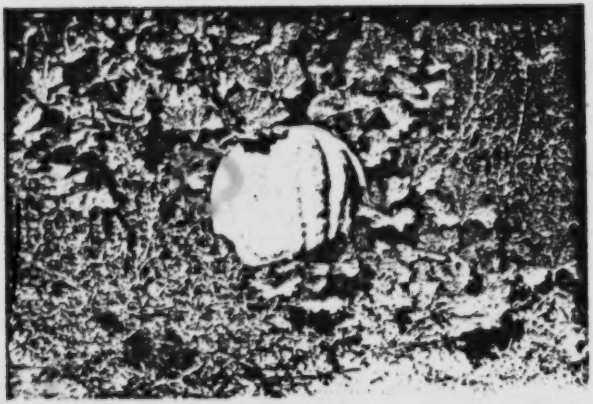


Fig. 141. The large gourd known as *kabuya* (*Cucurbita maxima*) growing close to the thorny fence (*aforaj*) which term is also generally used to designate a garden. Ahaggar, *Ahl Azzi* Arabs.

Tuareg garden owners have other obligations besides those listed under these three items, but these obligations vary with the systems of contract of which there are three. One system is known as *khamast* according to which the agriculturists gets only one fifth of the crops. This system is widely found in North Africa but has disappeared in Ahaggar some years ago. It is said that it was abolished by the *Amenukal* because it very frequently gave rise to disputes between Tuareg garden owners and their cultivators. It is now replaced by two other systems, the *tilt* system allowing one third of the crops to the cultivator, and the *aril* system according to which crops are divided equally between the owner and the cultivator. This last system is that almost exclusively used in Ahaggar nowadays.

To revert to Tuareg obligations towards their cultivators, these obligations, in addition to those mentioned above, are as follows:—

(4) To hand over an amount of seed-corn (*téfest*) of wheat and barley according to the size of the garden plot and the system of contract. With a *khamast* agreement the Tuareg garden owner gives all seed-corn. With a *tilt* agreement half of the seed-corn is supplied by the owner, the other half by the cultivator who is then also allowed to cultivate a private garden. With an *aril* agreement half of the seed-corn is given by the garden owner, the other half by the cultivator who does not possess a private garden unless he is headman of a *foggara* (p. 196).

(5) To give an amount of food to the agriculturist during the cultivation period of six months. This payment is known as *tenafok*, and is fixed at 75 kilos of millet, barley, or dates when cultivation is done according to the *aril* system, while 150 kilos are given for cultivation according to agreements of the two systems *tilt* and *khamast*.

The net profit to an agriculturist who cultivates for a Tuareg garden owner is lower than that gained by an agriculturist cultivating exclusively for his own private use. This will be seen more clearly from the calculations below where a garden with an annual yield of 700 kilos wheat and barley is considered:—

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

	Cultivator		*Tuareg Garden Owner*	
The khamast system	Receipts	Expenditure	Receipts	Expenditure
The *khamast* division	140 kg		560 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn				50 kg
Food given to the cultivator	150 kg			150 kg
	290 kg	10 kg	560 kg	210 kg
Net profit	280 kg		350 kg	
The tilt system				
The tilt division	233 kg		466 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	150 kg			150 kg
	383 kg	35 kg	466 kg	185 kg
Net profit	348 kg		281 kg	
The aril system				
The *aril* division	350 kg		350 kg	
Land rent		5 kg		5 kg
Yield of one garden bed to blacksmith		5 kg		5 kg
Seed-corn		25 kg		25 kg
Food given to the cultivator	75 kg			75 kg
	425 kg	35 kg	350 kg	110 kg
Net profit	390 kg		240 kg	

A few notes should be added to these calculations of receipts and expenditure in the three systems. Thus the profit of the cultivator in all three systems is somewhat bigger than is indicated. The hoe is given by the Tuareg garden owner, who must also make certain payments for irrigation work and for the making of new garden beds as mentioned above. The garden owner's net profit in kilogrammes is consequently somewhat lower than indicated, but it should be mentioned that payments made by a Tuareg garden owner are hardly ever made in wheat and barley, but mainly in millet and dates which are less valuable, particularly so because the pastoral Tuareg acquire millet and dates at very low prices during their caravan expeditions (cf. p. 209 ff.). Therefore, the profit made by a Tuareg garden owner cannot so easily be given in kilogrammes of agricultural food products. It is evident that all three systems are profitable to the Tuareg, and it is clear that an agriculturist who cultivates a garden entirely on his own behalf is better off than an agriculturist who works for the Tuareg. It is also evident that to the agriculturist the *khamast* system is less profitable than the *tilt* system, which again is less profitable than the *aril* system. With the abolishment of the *khamast* system the agriculturists now

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

obtain a larger amount of vegetable food products and more wheat and barley. The pastoral Tuareg gain less from their gardens than they did when the *khamast* system prevailed, but it is still profitable for them to be garden owners.

The quantity of agricultural products anually consumed per person among the *Kel Ahaggar* is estimated by Lhote at 187 kilos millet, 15 kilos dates, and a small amount of wheat for which no figure is given. For Arabs of the Sahara the quantity of vegetable food is estimated at 180 kilos wheat, and 75 kilos dates anually per person (Lhote 1955a, p. 263). I add to this that wheat is used for bread to a very large extent by the Ahaggar Tuareg, who also make much use of barley for bread and porridge. According to Malaurie the amount of agricultural food products available per person among the Ahaggar Tuareg is about 400 grammes a day, or 146 kilos anually (Malaurie 1953, p. 342). It should be noted again that the amount of agricultural food products necessary for a Tuareg household varies greatly from one year to the other. In years of drought when agricultural products form so to speak the only source of food for the nomads, they estimate that a household consisting of husband, wife, and one child will consume about two kilos of cereals (dates) every day, or 730 kilos in a year. Consequently the amount of cereals and dates consumed anually per person may in dry years rise to about 245 kilos. This seems to correspond to the amount of food considered necessary for Arabs of Tidikelt and Tawat, who live almost exclusively on cereals and dates. When employed as labourers by the French Administration these sedentary Arabs are given 16 kilos of wheat and 4 kilos of rice a month, or 240 kilos of agricultural products anually per person (Information obtained from the administration office of In Salah in 1954). The agricultural products obtained by a pastoral household from a single garden will not meet the needs of the household and its slaves even in years of good grazing, and less so in dry years when pastoralists subsist entirely on agricultural food products. I give an example: During the year 1954 55 which was extremely dry, a Tuareg who owned three gardens cultivated with an *aril* agreement could not feed his household and his slaves (comprising two men, two women, and three children from five to twelve years old) by means of his own garden products. The Ahaggar Tuareg depend on caravan trading for their provisions of agricultural food, and trading also helps them to create the capital of millet and dates which is invested in their gardens in Ahaggar grown on their behalf by agriculturists. I believe that most pastoral households of Ahaggar have gardens, but there are Tuareg who have none. This is true, for instance, of most Tuareg living in and around the Ahnet Massif. Tuareg of this region formerly had gardens irrigated by the *foggara* system at Abalessa, but to-day they acquire their vegetable food products mainly by caravan trading.

IRRIGATION AGRICULTURE IN AYR

The largest aggregation of sedentary people in Ayr is found in Agadez (4,737), which is inhabited almost exclusively by negroid peoples who speak Hausa though most of them also know the Tuareg language (*tamachek*). This large sedentary population mainly lives on trade and on crafts of various kinds. The inhabitants are known to the Tuareg as the *Imeggedezen*. They are said to be related to the Sultan (or the *Amenukal*) of Agadez. There is a tradition which claims that the Sultan came

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

tion that subsisted on agriculture. Most members of the *Kel Ewey* group are fairly negroid in appearance, and though some of them lead a nomadic life and subsist mainly on stock-breeding, the bulk of the *Kel Ewey* are sedentary agriculturists who have some livestock comprising goats, sheep, zebus, and sometimes camels also. Among the fair-skinned Tuareg of the *Kel Ferwan* drum-group there are very few sedentary agriculturists, though a few vassals have taken up irrigation agriculture in recent times. There are also agriculturists within the negroid group of the *Kel Ferwan* known as *Irawélen*. Some *Kel Ferwan* Tuareg have gardens cultivated by their slaves, but this is not customary nowadays when slavery is of little importance in Ayr. Contracts between pastoral Tuareg and cultivators are said to have been unknown until recent times when a few pastoralists have made contracts with cultivators. There seem to be no fixed systems regulating such relationships, but it is said to be common for the cultivator and the Tuareg to divide crops equally between them.

Though agriculture could be practised in Ayr without artificial irrigation there are no rain-grown crops within the Massif nowadays. The *foggara* system is unknown, and irrigation is done by raising water from shallow wells. The system of a pole and bucket provided with a counterweight known in Ayr as *asefian* has disappeared quite recently. It was used at many agricultural settlements of Ayr until a few years ago, and in parts of the country formed the only type of irrigation system at the time of the French occupation. One informant told me that in his boyhood about 35 years ago no other irrigation method was employed at Alarses, and this is in agreement with literature (cf. Capot-Rey 1953a, p. 322). At that time, however, the method of raising water from wells by animal traction (in Ayr *amu*, in Ahaggar *tanut*) was also practised at many settlements. It is unknown when it came to Ayr, but it is said to have been introduced from the north – probably from the regions of Fezzan and Tasilé-n-Ajjer from where the same system came to Ahaggar (cf. p. 187). It is now used at all settlements as the only type of irrigation system, and zebu-oxen are always used for traction. This was not so in the past when zebus were less common than to-day, and it is said that donkeys were then the common draught-animals. The irrigation of gardens is performed in much the same way as in Ahaggar. The water raised from the shallow well (*amu*) is led through a narrow canal (*arelal*) to a large basin (*tisemt*) from where another canal (*dukl*) leads to the garden (*afarag*), which is divided into a number of beds (*éfenṛal*).

Cereals form the most important crops in Ayr. The common winter crop is wheat (*elkama*; *Triticum vulgare*), but also barley (*Hordeum tetrastichum* var. *pallidum*) is very widely grown. One crop of these two cereals is taken every winter, and it is said that the period of growth is about five months; sowing is done in October, harvest in March. Cereals are also important for summer crops. Both millet (*énélé*; *Pennisetum typhoideum*) and sorghum (*abora*; *Sorghum caudatum*) are grown, and millet, as we have seen, has a very short period of growth – only about two months (cf. p. 184). But though millet is most important as food for agriculturists and pastoral Tuareg alike, it is not widely grown because it is difficult to protect it from the numerous small birds and because, it is said, millet grown in Ayr is of a quality inferior to that of the Sudanese type. Most of the millet eaten in Ayr is therefore imported from Damergu by pastoral Tuareg. By far the most important summer crop grown in Ayr is maize (*Zea mays*), which is known to the Tuareg as *abora maser*, that is "Egyptian sorghum" (*abora* = sorghum; *maser* = Egypt) (the name *maser* is also used to designate the white cotton used for garments

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

by many Tuareg, who say that they have not always known this white cotton, though indigo cotton has been introduced from the Sudan since very remote times). Maize has a normal period of growth of about three months, and two – in certain places perhaps even three – yields are taken in the hot seasons.

In addition to the above-mentioned cereals there are various kinds of vegetables grown in the Ayr gardens. Tomatoes (*tomatem*; *Solanum lycopersicum*) are grown at most seasons with the exception of the dry and very hot summer period (*éwilen*). Also common in the Ayr gardens is the sweet potato (*dankale*; *Ipomoea Batatas*), which is sown at the beginning of the rains and harvested in winter. The true potato (*batata*; *Solanum tuberosum*) has been introduced more recently, and is grown mainly to be sold to European households in Agadez. It is grown in Eastern Ayr (Tabello). Melons (*Cucumis melo*) and water melons (*Colocynthis citrullus*) are grown all over Ayr and there are different vegetables such as onions (*Allium cepa & A. sativum*), which are harvested at most seasons. Two plants are grown mainly because they are important as admixtures to porridge sauce. One is called *ékabewwa* (*Corchorus olitorius*); it has maize-like seeds which are pounded in a mortar for sauce-making. The other plant is known as *malokhiya* (*Corchorus tridens*); its leaves are dried and pounded for sauce (cf. p. 243). The latter plant also grows wild outside the gardens. There are in Ayr also certain spice-plants, e.g., *Capsicum annuum & C. frutescens*. To all these cultivated plants can be added certain fruit trees, such as the date palm (*talesdar*; *Phoenix dactylifera*), the fig tree (*tahart*; *Ficus carica*) grown in the mountains, and the lemon tree (*lemon*; *Citrus aurantifolia*) which is grown in Southern Ayr; it yields very small fruit which remains green even when ripe. It should finally be mentioned that the cotton plant (*ebduga*; *Gossypium hirsutum*) is also grown in some gardens of Southern Ayr. According to Miré and Gillet it was introduced into Ayr by the Hausa, but the plant has also been introduced further north in the Sahara in Tawat (Miré & Gillet 1956, p. 244). As stated by Rodd, the cotton plant is rare in Ayr and has perhaps been recently introduced into this region (Rodd 1926a, p. 132). There are many other cultivated plants in Ayr, but the above mentioned constitute the most important species.

In Ayr, as in the north, irrigated cereals form the basis of agriculture. Irrigation is carried out by means of a system introduced from the north, and the agricultural techniques largely resemble those of that section of the Sahara inhabited by Northern Tuareg, though there are certain differences. A new garden in Ayr is prepared by cutting and burning away the wild vegetation of trees, bushes, herbs, and grasses. By crop rotation (wheat and barley in winter; maize, millet, and sorghum in summer) it is possible to cultivate the same garden plot for a few years in succession – up to six or seven years, it is said. After this time it becomes necessary to make a new garden, or to manure the old garden plot with camel and cow dung whilst manure (*taki*) from other animals or from human beings is said not to be used, as it would cause the crops to become inedible. A well-manured garden plot can be cultivated continuously for about fifteen years. But fertilizing is not practised by all agriculturists, and to my knowledge they do not carry fresh soil to the garden plots as is the case with the agriculturists of Ahaggar. Agriculture in Ayr therefore frequently resembles shifting cultivation, though plots are irrigated, and deserted garden land is frequently seen in the valleys where agriculture is practised.

7:Nicolaisen E-5 (1951-1962) 1963 .MS25 Tuareg MS25

AGRICULTURAL IMPLEMENTS AND THE PRESERVATION OF CROPS

241 412 The hoe forms the basic agricultural implement in Ahaggar and in Ayr. The type of hoe used in Ahaggar is known as *agelhim*, and it is akin to that in general use among irrigation farmers of the northern oases. It has a very large and heavy iron head provided with a ring for the shaft. I believe that this type of hoe is particularly fitted for irrigation work, but it does not seem to be in general use in Ayr. I have seen it at Iferwan in Northern Ayr where agriculturists have much contact with Tasilé-n-Ajjer, but I have not seen it further south in the Massif where it seems to be unknown. The common type of hoe in Ayr is different; it is named *tagumit* and is hafted by means of a tongue (Fig. 143d). The same type of hoe is widely distributed in Africa south of the Sahara, and it is perhaps to be considered the oldest type of iron hoe within the continent (cf. Feilberg 1934, p. 228–278). [171]

241 The hoe is used for agricultural work in general, for digging irrigation canals, making garden beds, and for the preparation of the soil. The hoe is not used for sowing cereals. Sowing in Ayr is known as *anabal* and is performed in the following way:— As many seeds as can be kept between the first and second fingers are pressed a little into the soil, and water is led into the garden beds immediately after sowing. I have myself never watched sowing, but I was told in Ayr that it was frequently done by old women. I think that this is probably connected with the belief in the mystic power known as *elbaraka* so characteristic of all North African peoples. For cereals contain this mystic power, which can be spoiled by unclean women. It is considered harmful to the *elbaraka* blessing if cereals are handled by menstruating women (cf. Westermarck 1926, I, p. 230). The hoe is used for weeding, but the agriculturists of Ayr also have a special implement for this particular task. This is known as *elgechwad* and consists of a curved semi-circular iron blade hafted to a short wooden handle by means of a tongue (Fig. 143e). The semi-circular blade is sharpened at its outer and convex side which is pushed against the roots of weeds. [178] [241] 241 412

243 414 Various methods are used for the harvesting of crops. In Ahaggar and in Tasilé-n-Ajjer wheat and barley are always harvested by means of a sickle (*amreh*) (Fig. 143a–b). The sickle in Ayr is known as *elgechwad*, like the weeding implement mentioned above. It is not used for harvesting crops, but for the cutting of annual grasses to be stored for fodder (Fig. 143f). In Ayr both wheat and barley are harvested by drawing the straws from the ground with the hands. In Ahaggar and Tasilé-n-Ajjer sickles are also used for harvesting dates, while the date-growing agriculturists of Ayr use another method. They do not cut the bunches, but proceed in the following way:— When dates begin to ripen they enclose every bunch in a plaited pouch to protect the fruit from the ravens and other birds. The dates are harvested one by one when they are ripe, while those not yet fully ripe are left to be harvested later. Harvest is done in this manner about once a week until all dates have become ripe. Maize in Ayr is harvested by drawing the plant from the ground with the hand, and this work is normally facilitated by loosening the soil around the roots by means of the hoe. I do not know how maize is harvested in Ahaggar, where this plant is not so widely grown as in Ayr. Everywhere among agricultural people of Ahaggar and Ayr millet and sorghum are cut with a knife (Ahaggar, *ehnusi*; Ayr, *ezegiz*) (Figs. 171–172). 245 243

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

243
412

Fig. 143a-f.
a-b. Sickles of the type used for harvesting wheat and barley in Ahaggar. They are known as *amrek*, pl. *imrekn*.
a. From Tamanṛaset. Total length, 0.271 m. (N.M. G. 5256).
b. From Abalessa. Total length, 0.365 m. (N.M. G. 5828).
c-f. Agricultural implements from Ayr.
c. The short threshing stick (*aburi*). From Iferwan. Dimension: 0.49 m. (N.M. G. 6618).
d. The hoe (*tagamit*) hafted by means of a tongue. From *Kel Ewey* Tuareg near Agadez. Dimension: 0.70 m. (N.M. G. 6615).
e. The semi-circular weeding implement (*elgechwad*). From Iferwan. Dimension: 0.295 m. (N.M. G. 6617).
f. The sickle (*elgechwad*) which is used for cutting annual grasses. From Agadez. Dimension: 0.305 m. (N.M. G. 6613).

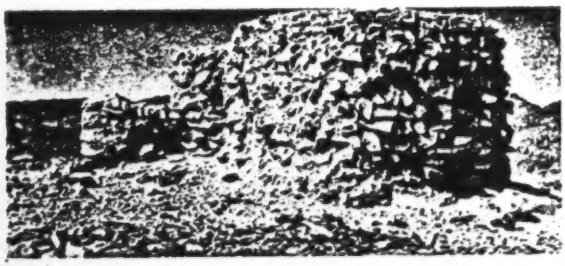
241 462 It seems as if millet and sorghum are always harvested by women, while dates are harvested only by men. Other crops are harvested by persons of both sexes.

243 Threshing methods are the same in Ahaggar and Ayr. Wheat and barley, which are sheaved and dried before threshing, are beaten with a stick (Ahaggar, *aburi*; Ayr, *aburi* or *asedbak*). This threshing stick is an unfashioned bough of trees or date palms, but a short and club-like implement is also frequently used in Ayr (Fig. 143c). Threshing of millet, sorghum, and maize is done by pounding in a

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

them. They are lined and covered with mats as in Ahaggar, and though they may be used for the storage of wild seeds they are mainly used for grown cereals and are generally found in or close to gardens. Grain silos built of stones and mud – the *tarassana* type of Ahaggar – are said to occur among the *Kel Ewey* but I have never seen such storerooms in their villages, nor have I met the typical African storeroom built of straw and resting upon poles until south of the Massif in Damergu where they are used by shifting cultivators. Large earthenware containers shaped like cooking pots are used to store vegetable products (cereals) in certain villages, particularly at Iferwan. Pastoral Tuareg of Ayr have the underground storerooms for the preservation of surplus grain and other vegetable products. Cereals to be consumed in the camps (notably millet) are kept in large skin-bags resting upon poles that they may not be damaged by white ants. The Ahaggar Tuareg also preserve cereals in their tents in skin-bags.

Irrigation agriculture is a strenuous task, but it is less influenced by climatic conditions than all other occupations practised in the Sahara. The farmers are not exposed to the same disasters of drought periods as are pastoral Tuareg in the north, though it is said that rain is a direct blessing also to irrigated crops. But cultivated plants are exposed to certain dangers, e.g., locusts, and crops do not always thrive as they should. Bad luck in agricultural activities may in the opinion of the farmers be due to some mystical power or other. It may arise from incorrect treatment of cereals and dates so that they lose their *elbaraka*. Menstruating women, as mentioned above, are dangerous to vegetable food, and this is also true of the fire, for which reason one should never throw date kernels into the flames. The farmers also fear that their crops may suffer damage from the attack of the *Kel Asuf* spirits, and particularly from the attack of the malignant force attached to the "evil eye" or the "evil mouth". To protect their crops the farmers frequently use amulets such as broken pots and skulls of domestic animals (notably of donkeys), which are considered an effective means against the "evil eye" and the "evil mouth" (cf. Nicolaisen 1961, p. 133 f., 160).



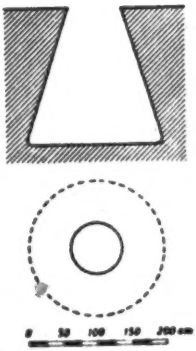


Fig. 145. Grain silos of the *tarassana* type built of stones and mud. Ahaggar, Abalessa.
Fig. 146. Cross section of a subterranean storeroom for cereals, and the like (*égrad*). Dimensions according to Foucauld: 2.00 m–2.50 m deep, 2.00 m in diameter at the bottom, 0.75 m in diameter at the surface (cf. Foucauld 1951–52, I, p. 459 f.).

[text continues on p. 209]

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

there will be one entirely dry year throughout, during which stock-breeding products have little or no value as food, and in such years of dry pasture there will also be very few wild plants to collect. Hunting, which plays little part for most Tuareg nowadays, is also of little value in an entirely dry year when many game animals die or migrate to other regions with more favourable pasture. It would seem obvious for pastoral Tuareg to do the same and to take their animals to grazing grounds outside of Ahaggar – particularly to the southern plains where pasture is normally better than in their own country. We have seen that most Ahaggar Tuareg in bad years have their she-camels far from Ahaggar in the Tamesna plains or in the country north of Adraɣ-n-Foras. We have also mentioned that, under very severe conditions, camps of Ahaggar and Ahnet may move to these southern regions with their flocks, though extensive goat-migrations are not always profitable. But most Tuareg remain in Ahaggar even in very dry years with their camps and flocks. Some of the animals will die, and none of them can be mated so that the flocks may rapidly decrease. During such years of drought the Ahaggar Tuareg live so to speak exclusively on agricultural food products of which they get only a part from their gardens grown by sedentary agriculturists (the *Ḥarratin*, or *Izzegaren*). It is mainly through caravan trading that the Ahaggar Tuareg acquire their vegetable food products. Their two important trading expeditions to the Tidikelt oases and to the Sudan are carried out anually for the main purpose of acquiring dates and millet.

Trading with the Tidikelt oases (Awlef and In Salah) is based mainly upon a surplus of goats, camels, butter and cheese, and on dried meat. But many Tuareg who obtain large amounts of millet from the Sudanese trading expedition also sell part of their wheat grown in their own gardens in Ahaggar, and Sudanese articles bought during their south-bound trading expedition. In a dry year some Tuareg may choose not to visit the Tidikelt area as they have too small a surplus for trading. The south-bound caravans, on the other hand, are rarely prevented from going as their main trading object is rock-salt of an excellent quality mined at Amadror north-east of the Ahaggar Massif. Both north-bound and south-bound caravans will set off in autumn when the hottest season has come to an end, that is at the end of September or at the beginning of October.

The caravan route from Tamanraset in Ahaggar to In Salah in Tidikelt is about 750 kilometres, and the route is rather difficult because pasture is normally lacking for three to four days of the journey. Most Tuareg who cross this part of the desert therefore bring with them large supplies of the dried *tullult*-grass (*Aristida pungens*), which also serves as fodder for the pack-camels during the stay in the oases around which there is little pasture. The journey takes about twenty days in each direction, and the north-bound caravans return to Ahaggar again already in December or in January. The traders return with their camels loaded with dates of which a part may be re-sold in Ahaggar (Tamanraset), but they also buy European cotton and other European articles, which are cheaper in the north, and woollen blankets woven by sedentary people of the northern oases.

The south-bound caravans are very extensive. The towns visited in the south are Agadez, Tawa Tanut, and Zinder. The distance from Tamanraset to Zinder is, as the crow flies, about 1200 kilometres, while the distance from Tamanraset to Amadror, where salt is mined, is about 300 kilometres. In total the caravan journey from Ahaggar to Zinder and back again for many Tuareg amounts to more than 3000 kilometres. The south-bound caravans are organized as follows:— Slaves take the

7:Nicolaisen E-5 (1951-1962) 1963 MS25 Tuareg MS25

desert, which they might even cross to allow their animals to graze on Sudanese pastures (Ibn Khaldun I, p. 164 f.). Three Berber tribes or tribal groups, namely the Meseta, the Hawwara, and the Zenara, which, according to Ibn Khaldun, lead a pastoral life in Cyrenaica and further east, are stated to practise agriculture in the area between Alexandria and Old Cairo where they sojourn in winter (Ibn Khaldun I, p. 9). However, it would seem as if to most nomads of the northern desert agriculture was not so much practised that it could provide the necessary amount of cereals for the nomads. For, according to Ibn Khaldun, the Arab and Berber pastoralists of these northern regions generally spent the winter in the desert, while in summer they migrated to the Tell regions where they acquired their grain provisions (Ibn Khaldun I, p. 141, II, p. 275 ff., IV, p. 28 f.).

We have no information about agricultural activities among the Tuareg who, throughout the Middle Ages, lived in the very extensive area between the Atlantic Ocean and the Fezzan. Ibn Khaldun says that the Tuareg have camel-breeding as their most important occupation (Ibn Khaldun II, p. 105), and this is confirmed by Edrisi in the case of both Northern and Southern Tuareg. But though Edrisi states that the Tuareg live mainly on camel's milk and meat, certain passages of his book seem to indicate that agricultural products also played a part as food (Edrisi b, p. 10, 41, 67 f.). Ibn Batutah says that the Sultan of Tacadda (Ayr) knew neither wheat nor bread (Ibn Batutah IV, p. 443), which agrees with the fact that even to-day wheat-bread is not common among the people of Ayr, and he says of the Tuareg (the *Bardamah*) who live further south that they live on cow's milk and pounded millet mixed with water (Ibn Batutah IV, p. 437). This latter dish is doubtless identical with that known as *aṛehara* (Ahaggar) or *aṛejira* (Ayr) among modern Tuareg (cf. p. 245). Information about Tuareg nourishment is also given by Leo Africanus who, like Ibn Batutah, writes about this on the basis of personal experience. Leo says that the Tuareg live exclusively on camel's milk, butter, and meat, and eat no bread (Leo Africanus I, p. 152), but later he states that a Tuareg chief he visited in the desert had provisions of grown cereals and dates (Leo Africanus I, p. 154 f.).

Thus it seems as if agricultural food-products played a certain part for pastoral Tuareg of the Middle Ages. It is very possible that these products were obtained mainly through caravan trading, but the fact that agriculture is not mentioned in connection with the Tuareg of that early time cannot of course be taken as a proof that a primitive type of agriculture was then unknown. The Arab authors do not tell us much about Tuareg economy, and most Arabs who wrote about the Tuareg had no real knowledge of them. The fact that the *Kel Ajjer* practise a primitive type of agriculture in river valleys has not generally been noticed by Europeans travelling in that part of Africa. This form of agriculture, characterized by a type of primitive sowing, is perhaps to be considered very ancient in North Africa. In any event it would seem as if agriculture and stock-breeding during antiquity were closely connected subsistence activities (cf. Bates 1914, p. 30 f., 91 f.). It is also most interesting that the archaeologically known Fayum culture was based upon mixed farming as early as about 5000 B.C. (cf. Caton-Thompson & Gardner 1934), and the same holds for certain other prehistoric Egyptian cultures of about the same age (cf. Childe 1935, p. 49 ff.). One trait of the Fayum culture, namely the subterranean store-rooms for grain (cf. Caton-Thompson & Gardner 1934, p. 41 ff., pl. XXV ff.), is almost identical with the underground store-rooms used among the Tuareg. We can add that there is one other feature in Tuareg culture which perhaps point towards a connection between Tuareg culture and agriculture,